



## **ATTACHMENT 1**

# **Additional Information for the D&RG Regional Corridor Evaluation**

**December 2004**

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## 1.0 Introduction

This attachment is included to provide additional information for addressing the Court's concerns related to the D&RG regional corridor. The following sections provide complementary analysis for evaluating the corridor, including costs and environmental impacts.

The updated regional corridors cost estimates are total costs and include all cost components such as materials, right-of-way, wetland mitigation, pre-award engineering, incentives, and stipends. Section 3.0, Cost Estimates, presents updated estimates and a comparison of the major cost components of the D&RG and Great Salt Lake regional corridors. Appendix A, Regional Corridor Cost Estimates, provides supporting information for the cost estimates for all the regional corridors.

UDOT created five conceptual highway alignment options in the D&RG regional corridor to provide a more accurate determination of impacts. Section 4.0, D&RG Conceptual Alignments, describes the D&RG conceptual highway alignments. Section 5.0, Environmental Consequences of the D&RG Conceptual Alignments, presents the potential impacts to the important environmental resources identified in the study area and a summary of the concerns of community leaders. Section 5.6, Community Disruption Effects, discusses the anticipated social impacts of the D&RG regional corridor. Section 5.7, Comparison of the Environmental Consequences of the D&RG Conceptual Alignments to Alternative E, compares the conceptual alignments in the D&RG regional corridor to Alternative E in the Final EIS, which was originally selected as the Preferred Alternative.

## 2.0 Denver & Rio Grande Regional Corridor

The D&RG regional corridor follows the existing D&RG railroad tracks, which parallel Interstate 15 (I-15) through the North Corridor. The regional corridor presented in the Final EIS follows Interstate 80 (I-80) eastward from 5600 West in Salt Lake City and Interstate 215 (I-215) northward to the western side of the D&RG railroad tracks in Davis County. This regional corridor would require constructing new roadway from I-80 northward to I-15 and U.S. Highway 89 (US 89) in Farmington.

UDOT and the Wasatch Front Regional Council (WFRC) committed not to pursue an alignment north and west around the Salt Lake City International Airport (McConkie 2000; Warne 2000). This commitment was made based on traffic projections that did not justify additional travel lanes between I-80 and I-215. Therefore, the following sections describe the cost estimates and potential impacts of the D&RG regional corridor that runs from I-215 at 2100 North in Salt Lake City (see Section 3.0, Cost Estimates) and parallels I-15 through Davis County north to the I-15/US 89 interchange in Farmington.

### 2.1 Right-of-Way Widths Used for Estimating Costs and for Evaluating Impacts

To enable an equitable comparison between the regional corridors, a 95 m (312 ft) right-of-way (ROW) width was used for all regional corridors for the cost estimates in Section 3.2, Regional Corridor Cost Estimates. See *Legacy Parkway Technical Memorandum: Right-of-Way Issues* (HDR 2004) for a detailed discussion of the ROW and footprint width evaluated. Also see Section 3.1, Cross-Sections Used for Cost Estimates.

## 3.0 Cost Estimates

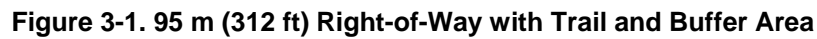
The regional corridor cost estimates in the Final EIS have been reexamined and updated to reflect total costs at 2004 price levels and to provide supporting documentation. The cost estimates for the regional corridors are not alignment-specific construction estimates, but are based on overall highway lengths and unit costs derived from recent UDOT projects. UDOT's engineering staff and its consultants used their best professional judgment and the best available current information to update these estimates.

This section presents total cost estimates for all of the regional corridors and a comparison of the costs of the D&RG and Great Salt Lake regional corridors. Supporting documentation for these cost estimates is included in Appendix A., Regional Corridor Cost Estimates. UDOT updated the cost estimates for all the regional corridors that were originally evaluated: Antelope Island, Trans-Bay, Railroad (Union Pacific and Denver & Rio Grande), Farmington Bay, and Great Salt Lake. The approach uses a consistent methodology to determine the cost and the cost differences for the various regional corridors.

### 3.1 Cross-Sections Used for Cost Estimates

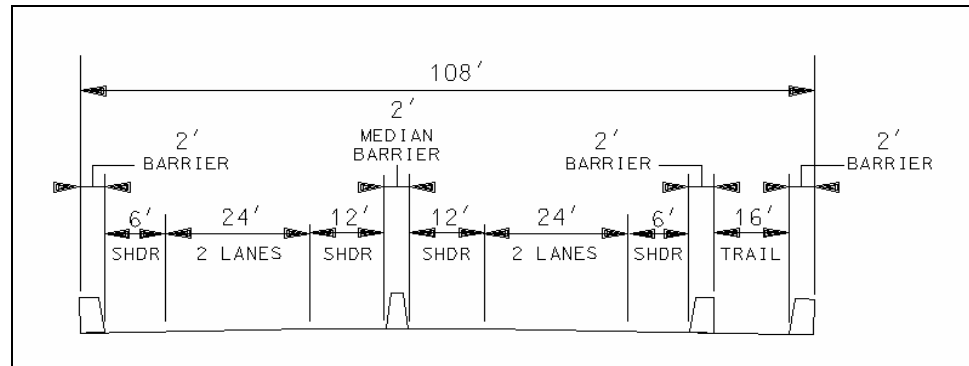
The typical cross-section width used for these estimates is 95 m (312 ft). See Figure 3-1 and Figure 3-2 below. These updated cross-sections include a vegetated median with a width of 15 m (50 ft) and a multi-use and equestrian trail with a width of 6 m (20 ft) along the entire length of the roadway on land.

The typical cross-sections shown below represent the maximum width that would be needed to construct the facility. The actual width of the facility, or footprint, varies within the total ROW width. The natural ground within the project limits and the roadway vertical alignment control the actual fill height. The fill height is the elevation of the roadway above the existing ground. The typical sections below show the ROW component dimensions where 2 m (6.6 ft) of fill would be required, which is the average amount of fill required throughout the majority of the Alternative E alignment. Additional roadway fill would be required to elevate an alignment at surface street crossings or for other features such as interchanges. The facility must be above the Great Salt Lake 100-year floodplain elevation of 1,286 m (4,218 ft) to ensure that traffic can operate during periods of high water.



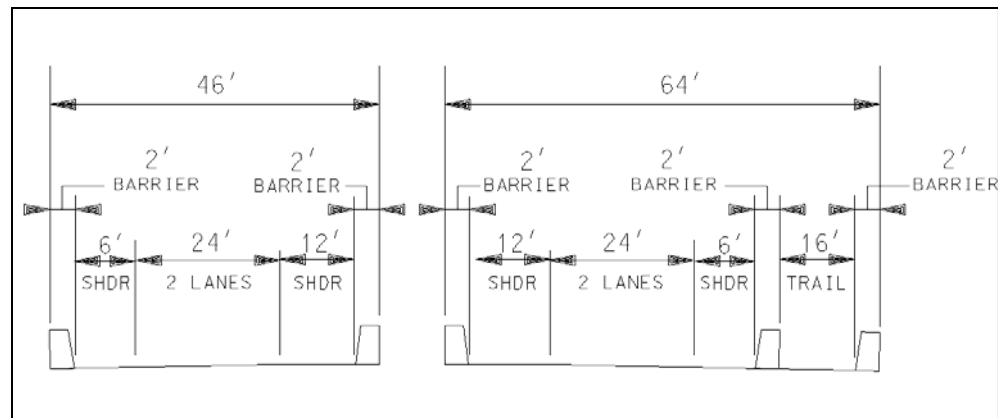
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accommodate a wider shoulder, median barrier, and trail. The cost estimates are based on bridges that are 33 m (108 ft) wide (see Figure 3-3).



**Figure 3-3. 33 m (108 ft) Bridge Width**

For cost-estimating purposes, the 33 m (108 ft) bridge width was used to determine the bridge area. This is a conservative assumption, because two separate bridges would probably be constructed. Building separate bridges would require more bridge area, which would increase the overall bridge costs (see Figure 3-4).



**Figure 3-4. Parallel Bridges**

## 3.2 Regional Corridor Cost Estimates

The Legacy Parkway Final EIS was completed in June 2000. The cost estimates for the regional corridors have been updated to reflect 2004 dollars. Table 3-1 presents the cost estimates prepared for the regional corridors and the change from the cost estimates presented in the Final EIS. These estimates are presented in order of least expensive to most expensive. Detailed cost estimates for all

regional corridors are included in Appendix A, Regional Corridor Cost Estimates.

**Table 3-1. Regional Corridor Cost Estimates**

| Regional Corridor   | 2004 Cost Estimate (millions) <sup>a</sup> | Final EIS Cost Estimate (millions) <sup>b</sup> | Difference (millions) | Change from Final EIS |
|---------------------|--|---|-----------------------|-----------------------|
| Great Salt Lake     | \$472                                      | \$300   | \$172                 | +57%                  |
| Denver & Rio Grande | \$623                                      | \$460   | \$163                 | +35%                  |
| Farmington Bay      | \$864                                      | \$520   | \$344                 | +66%                  |
| Antelope Island     | \$1,558                                    | \$1,400   | \$158                 | +11%                  |
| Union Pacific       | \$1,735                                    | \$1,900   | \$165                 | -9%                   |
| Trans-Bay           | \$1,901                                    | \$1,460   | \$441                 | +30%                  |

The cost estimate as of the contract date for the Legacy Parkway (January 2001) was \$451 million.

<sup>a</sup> Includes quantity estimates, wetland mitigation, displacements and relocations, ROW, and contractor pre-award engineering, incentives, and stipends.

<sup>b</sup> The cost estimates are presented in the Final EIS in Table 2-10. The cost estimates in the Final EIS were planning-level costs.

Based on the updated cost estimates, the Great Salt Lake regional corridor still has the lowest cost at about \$472 million, and the Trans-Bay regional corridor has the highest estimated cost at about \$1.9 billion. The increase in the regional corridor cost estimates can be attributed primarily to inflation between 2000 and 2004. However, one regional cost estimate, the Union Pacific Railroad estimate, decreased from \$1.9 billion to \$1.7 billion. This change is due to refining the cost-estimating assumptions and applying a consistent cost-estimating methodology to all regional corridors.

Items specific to the construction contract for the Legacy Parkway, which included contractor pre-award engineering, stipends, and incentives totaling \$32,600,000, were added to the estimated cost after the Final EIS was published. These additions resulted in a cost of \$451 million. These specific cost items are tallied as follows:

- Pre-award engineering – \$22,500,000
- Incentives – \$10,000,000
- Stipends – \$1,000,000

However, since these items were included in the Legacy Parkway contract price, they were added to all regional corridor cost estimates for comparison. If these items are excluded, the Great Salt Lake and D&RG regional corridor cost estimates are \$439 million and \$589 million, respectively.

### 3.3 Comparison of Costs of the D&RG and Great Salt Lake Regional Corridors

The estimated cost of \$610 million (\$589 million without contract items) for a highway in the D&RG regional corridor is \$151 million, or about 33% higher than the cost estimate for a highway in the Great Salt Lake regional corridor (\$459 million, or \$439 million without contract items). This section compares the specific cost items that make the D&RG regional corridor estimate different from the estimate for the Great Salt Lake regional corridor. The major cost items include wetland mitigation, ROW, utility relocations, bridges (for crossing streets and interchanges), and environmental cleanup costs.

#### 3.3.1 Wetland Mitigation Costs

The updated cost estimates include costs for wetland mitigation. Mitigation costs include purchasing wetlands and associated upland habitat and restoring existing wetlands. The cost of wetland mitigation is assumed to be proportional to the acreage of wetland impacts; that is, alignments with more wetland impacts would have higher mitigation costs.

A wetlands mitigation cost per acre was derived from the mitigation costs of Alternative E and is based on purchasing and improving the Legacy Nature Preserve, which would cost about \$25 million. This cost includes \$20.5 million for the property acquisition and \$4.5 million for improvements. The cost was based on both the direct and indirect wetland impacts of Alternative E as reported in the Final EIS. However, to simplify the cost associated with wetland impacts, UDOT assumed that these costs were associated only with mitigation for direct impacts to wetlands (114 acres). Using the total cost of \$25 million and dividing by the 114 acres of direct wetland impacts equals a mitigation cost of \$219,298 per acre of directly impacted wetland.

Due to the revised typical cross-section, the highway footprint width has changed from 100 m (328 ft) to 95 m (312 ft). Based on preliminary engineering redesign, this reduction in footprint width reduces the wetland impacts for Alternative E to 113 acres. However, for the purposes of this analysis, the mitigation for the Alternative E alignment in the Great Salt Lake corridor was assumed to be the mitigation for 114 acres of impacts despite the changes reflected in UDOT's revised project components.

The more easterly location of the D&RG regional corridor would reduce the amount of highway area lying within the floodplain of the Great Salt Lake compared to Alternative E. A preliminary vegetation and hydrology evaluation conducted in July 2003 determined that a highway alignment within the D&RG



regional corridor would impact about 85 acres of wetlands. As a result, wetland mitigation costs associated with the D&RG regional corridor would be less than those for the Great Salt Lake regional corridor (114 acres, the same as Alternative E). Using the calculated mitigation cost of \$219,298 per acre, the estimated wetland mitigation cost for the D&RG alignment is about \$18.6 million. Table 3-2 presents the estimated wetland mitigation costs for the D&RG and Great Salt Lake regional corridors.

**Table 3-2. Wetland Mitigation Costs**

| Regional Corridor            | Wetland Mitigation Costs |
|------------------------------|--------------------------|
| Denver & Rio Grande          | \$18,600,000             |
| Great Salt Lake <sup>a</sup> | \$25,000,000             |

<sup>a</sup> The mitigation cost for the Great Salt Lake regional corridor is based on the approximate cost of the Legacy Nature Preserve.

As mentioned above, the mitigation cost per acre was based on the total mitigation cost for both direct and indirect impacts associated with the Final EIS Preferred Alternative. The indirect wetland impacts in the D&RG regional corridor might be less than the indirect impacts in the Great Salt Lake regional corridor. The cost per acre for indirect wetland impacts was not calculated separately, and the indirect wetland impacts of the D&RG regional corridor could not be determined because no detailed highway alignment was used to estimate costs. As a result, the wetland mitigation costs presented above in Table 3-2 for the D&RG regional corridor may be an overestimate. However, considering that the D&RG and Great Salt Lake regional corridors are identical in the north portion of the study area (north of Parrish Lane), the indirect impacts of the regional corridors in this area would be the same, and any indirect impacts in this area are accounted for in the cost estimates.

### 3.3.2 Right-of-Way Costs

ROW costs were based on a cost per acre of land in the ROW and the anticipated number of displacement impacts. The costs per acre varied depending on the general location of the regional corridor. David West, a UDOT Senior Right-of-Way Associate with 30 years of experience, developed the ROW cost estimates. UDOT's Central Office reviewed and approved the estimated ROW costs. Supporting documentation for the ROW cost estimate for each alternative can be found in Appendix A, Regional Corridor Cost Estimates. The lead agencies also hired an independent consultant to review the cost estimates.

The overall length of the alignments was determined. The D&RG alignment is about 22.5 km (14.0 mi) long, and the Great Salt Lake alignment is also about

22.5 km (14.0 mi) long. A 95 m (312 ft) ROW width was used in conjunction with the total length to calculate the total acreage required for each alignment. The total ROW acreage is 529 acres for both the D&RG and Great Salt Lake alignments. This acreage does not include the additional area needed for interchanges, overpasses, and underpasses. The acreage is based on the width and total length of the regional corridor.

Land values were determined based on the relative location of each alignment. Land was valued at \$100,000 per acre along the D&RG corridor and \$85,000 per acre along the Great Salt Lake corridor. Miscellaneous costs were added to each alignment, including appraisal fees and reviews, property acquisition costs, relocation costs, court costs, unforeseen costs, and utility costs using professional judgment based on the anticipated number of residential and business displacements.

Miscellaneous costs include any additional property identified during the project implementation not previously included in the highway ROW, easement costs, demolition, property improvements, and property management. The court costs include verdict costs above the appraised values, expert witness fees, and administrative settlement costs. These miscellaneous costs total \$26.1 million for the D&RG alignment and \$8.85 million for the Great Salt Lake alignment. For a detailed breakdown, see Appendix A. The costs associated with ROW acquisition for the D&RG and Great Salt Lake regional corridors are shown in Table 3-3.

**Table 3-3. Right-of-Way Costs**

| Regional Corridor            | ROW Costs    |
|------------------------------|--------------|
| Denver & Rio Grande          | \$79,045,500 |
| Great Salt Lake <sup>a</sup> | \$53,853,636 |

<sup>a</sup> The ROW cost for the Great Salt Lake regional corridor was updated to reflect the 95 m (312 ft) ROW. The Final EIS used 100 m (328 ft).

### 3.3.3 Utility Relocation Costs

Major petroleum pipelines owned by Tesoro (formerly Amoco), Chevron, and Pioneer are located in the North Corridor. Several of these companies have petroleum pipelines that run adjacent to the D&RG tracks through North Salt Lake, Woods Cross, West Bountiful, and Centerville. Questar (formerly Mountain Fuel) owns a natural gas transmission line in the corridor. There are also several major water transmission lines that originate from two municipal drinking water wells next to the D&RG tracks in Woods Cross. The D&RG alignment would likely impact more utility lines (petroleum, power, water, natural gas, sewer, and telephone) that provide crude oil to the oil refineries and

utilities that service the existing developments surrounding the D&RG tracks than the Great Salt Lake regional corridor. Because the petroleum pipelines run adjacent to the D&RG tracks, the impact lengths would be greater than if the alignments crossed a utility perpendicularly.

The costs for the Great Salt Lake regional corridor were based on engineering judgment and detailed knowledge of utilities in the area. The costs for utility impacts in the Great Salt Lake corridor are estimated to be \$13.5 million. The cost estimate for the D&RG corridor includes an additional \$4.5 million (one-third of the utility relocation costs for the Great Salt Lake corridor) to account for additional utility impacts. Table 3-4 shows the utility relocation costs for the D&RG and Great Salt Lake regional corridors.

**Table 3-4. Utility Relocation Costs**

| <b>Regional Corridor</b> | <b>Utility Relocation Costs</b> |
|--------------------------|---------------------------------|
| Denver & Rio Grande      | \$18,000,000                    |
| Great Salt Lake          | \$13,500,000                    |

### **3.3.4 Bridge Costs**

The cost estimate assumes that the overall roadway width is narrowed where the roadway is on a bridge (see Figure 3-3 above, 33 m (108 ft) Bridge Width). However, the hard surface of the actual superstructure and pavement is wider to accommodate larger shoulders and barriers (median and exterior), which are required when the roadway and the trail are on a bridge. The cost estimate is based on single bridges that are 33 m (108 ft) wide.

The estimate assumes two system interchanges at the southern and northern termini and internal diamond interchanges at 500 South and Parrish Lane for both the Great Salt Lake and D&RG regional corridors. Street crossings (streets that cross over or under a particular alignment) are included in the bridge costs. The cost estimate for the D&RG corridor includes 12 street crossings, and the Great Salt Lake corridor includes 4 street crossings. There is also a cost for an additional 1.0 km (0.6 mi) of bridge needed to accommodate railroad crossings. The D&RG corridor crosses the D&RG railroad lines south of Parrish Lane. These rail lines are active until 400 North and are used by the Holly Corporation refinery. Any alternative would need to span the tracks with a bridge.

A unit cost of \$1,200 per square meter of bridge was used. This unit cost was based on the most current costs of similar bridges built by UDOT in the last two years (see Appendix A, Regional Corridor Cost Estimates, for detailed costs). Each street crossing was estimated using the 33 m (108 ft) width and a 55 m (180 ft) span length, which results in 1,815 m<sup>2</sup> (19,536 ft<sup>2</sup>) for each bridge. Table 3-5

presents the bridge cost estimates for the D&RG and Great Salt Lake regional corridors. For detailed cost calculations, see Appendix A.

**Table 3-5. Bridge Costs**

| Regional Corridor   | Bridge Costs  |
|---------------------|---------------|
| Denver & Rio Grande | \$157,090,000 |
| Great Salt Lake     | \$100,070,000 |

### 3.3.5 Environmental Cleanup Costs

In the south portion of the study area, the D&RG tracks are surrounded by industrial developments including several oil refineries. The cost estimate assumes that the D&RG corridor would impact two of these oil refineries (Silver Eagle and Holly Corporation) that are adjacent to the tracks but would not require purchasing the entire properties and relocating the entire refinery operations. However, there are costs associated with cleaning up areas where the alignments pass near or through properties owned by the oil refineries. Acquiring this land would require cleaning up hazardous materials and removing storage tanks before roadway construction could begin. UDOT property acquisitions could require the property owner to clean up existing contamination, decrease the property value based on the anticipated remediation costs, or seek to recover remedial costs from the seller after property condemnation and cleanup. However, no case law in Utah addresses this issue. Therefore, the environmental cleanup costs *might* be recoverable by UDOT.

The cost estimate assumes that the shallow soils surrounding refinery property would be contaminated by petroleum hydrocarbons. Environmental cleanup costs were estimated assuming that the ROW areas near oil refineries would be excavated to a depth of 1.8 m (6 ft) and filled with clean engineering fill before final construction. The cost estimate also includes the cost of demolishing and removing petroleum storage tanks within the ROW.

Table 3-6 presents the environmental cleanup cost estimates for the D&RG and Great Salt Lake regional corridors (see Appendix A, Regional Corridor Cost Estimates, for a detailed breakdown of the cleanup costs). An environmental cleanup cost of \$31.5 million was estimated for the D&RG corridor. There are no refinery properties on or adjacent to the Great Salt Lake corridor, and therefore no environmental cleanup costs are associated with that regional corridor.

**Table 3-6. Environmental Cleanup Costs**

| Regional Corridor   | Environmental Cleanup Costs |
|---------------------|-----------------------------|
| Denver & Rio Grande | \$31,530,000                |
| Great Salt Lake     | \$0                         |

### 3.3.6 Summary

Table 3-7 summarizes the major cost factors that make the cost estimate for the D&RG regional corridor different than that for the Great Salt Lake regional corridor. For detailed information, see Appendix A, Regional Corridor Cost Estimates.

**Table 3-7. Comparison of Costs for Great Salt Lake and Denver & Rio Grande Regional Corridors**

| Cost Factor                        | Great Salt Lake | Denver & Rio Grande | Difference (DRG – GSL) |
|------------------------------------|-----------------|---------------------|------------------------|
| Wetland mitigation <sup>a</sup>    | \$25,000,000    | \$18,600,000        | –\$6,400,000           |
| ROW <sup>b</sup>                   | \$53,853,636    | \$79,045,500        | \$25,191,864           |
| Utility relocations <sup>c</sup>   | \$13,500,000    | \$18,000,000        | \$4,500,000            |
| Bridges <sup>d</sup>               | \$100,070,000   | \$157,090,000       | \$57,020,000           |
| Environmental cleanup <sup>e</sup> | \$0             | \$31,530,000        | \$31,530,000           |
| <b>Total<sup>f</sup></b>           |                 |                     | <b>\$112,000,000</b>   |

<sup>a</sup> The mitigation cost per acre of wetland impacted is based on the approximate cost of the Legacy Nature Preserve.

<sup>b</sup> The ROW cost for the Great Salt Lake corridor was updated to reflect the 95 m (312 ft) ROW.

<sup>c</sup> The cost estimate for the D&RG corridor includes an additional \$4.5 million to account for additional utility impacts.

<sup>d</sup> The bridge costs include 12 street crossings and rail crossings for the D&RG corridor and 4 street crossings for the Great Salt Lake corridor.

<sup>e</sup> The environmental cleanup cost *might* be recoverable by UDOT.

<sup>f</sup> The total cost difference (\$151 million) includes miscellaneous cost items and contingencies not itemized in this table.

## **4.0 D&RG Conceptual Alignments**

To determine the range of impacts that could be expected for a highway in the D&RG regional corridor, and to ensure that a reasonable range of feasible alternatives were considered, five conceptual highway alignments were developed in the corridor.

Meetings were held with representatives from North Salt Lake, Woods Cross, West Bountiful, Centerville, Farmington, and Davis County (see Appendix B, Community Survey, for meeting minutes). A Community Planning Input Committee (CPIC) meeting was also held with the local communities and other interested parties to help develop the D&RG conceptual alignments.

### **4.1 Description of D&RG Conceptual Alignments**

The D&RG and Great Salt Lake regional corridors are identical north of Parrish Lane. Similarly, each of the proposed D&RG conceptual alignments north of Parrish Lane follows Alternative E.

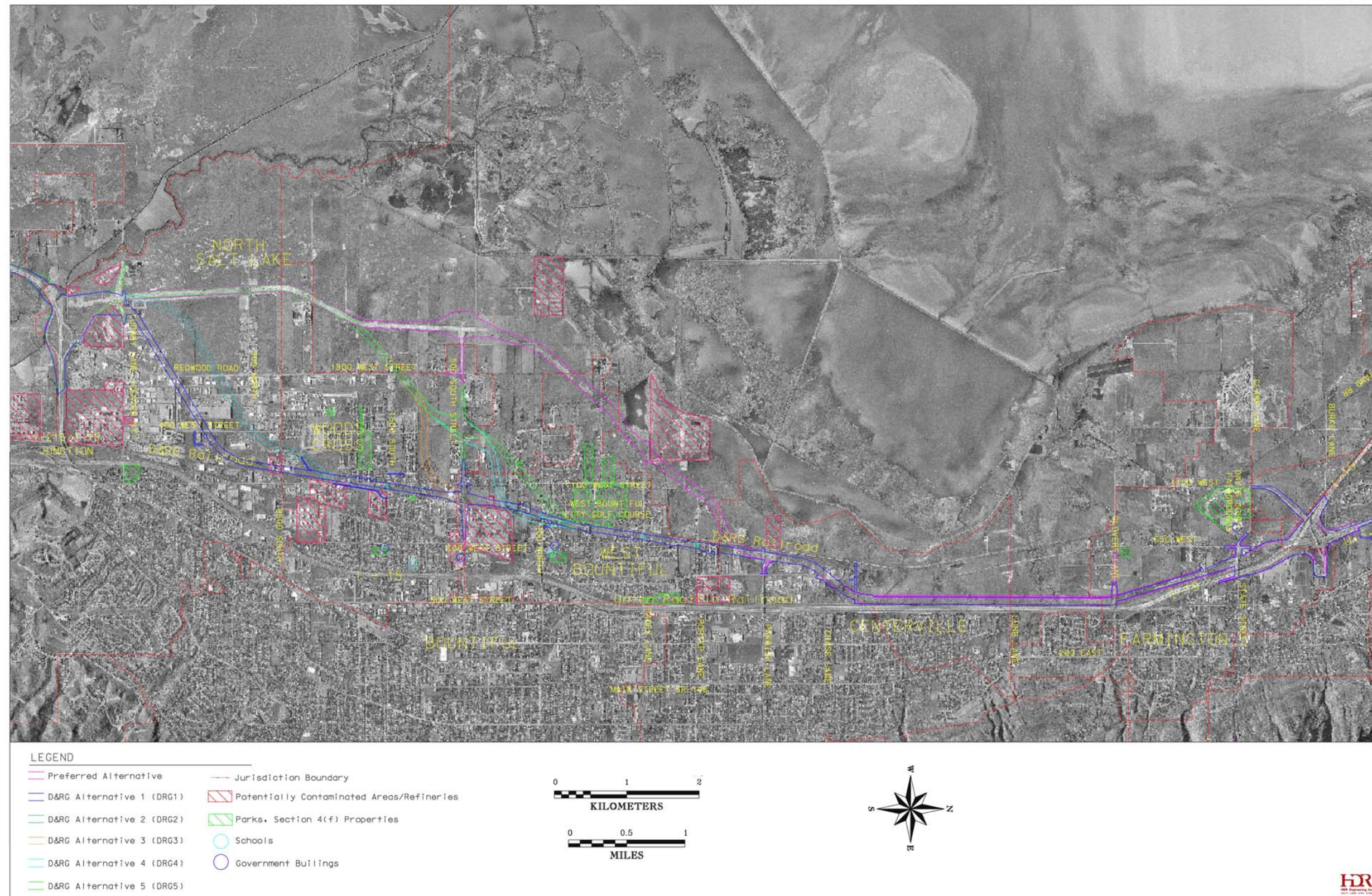
The D&RG conceptual alignments would include the same interchange locations as Alternative E, including interior diamond interchanges at 500 South and Parrish Lane. Bridges are assumed to be required at 12 surface street crossings at the following locations:

- **North Salt Lake:** 2600 South, 400 West, Redwood Road, and Center Street
- **Woods Cross:** Redwood Road (1800 West) and 1500 South
- **West Bountiful:** 400 North, 1100 West, Page's Lane
- **Centerville:** Porter Lane and 1250 West
- **Farmington:** Glover's Lane and State Street

The Redwood Road crossing is listed twice but is counted only once.

The five specific D&RG conceptual alignments south of Parrish Lane are shown in Figure 4-1, Denver & Rio Grande Conceptual Alignments.





**Figure 4-1. Denver & Rio Grande Conceptual Alignments**



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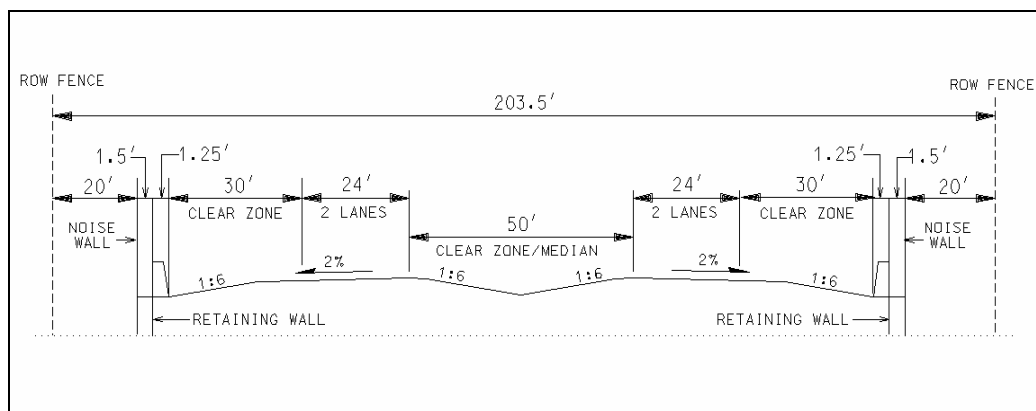
## **5.0 Environmental Consequences of the D&RG Conceptual Alignments**

This section, along with Section 3.0, Cost Estimates, and Section 6.0, Alignment-Specific Cost Estimates, are provided to assist the federal agencies in determining the practicability of a Legacy Parkway alignment within the D&RG regional corridor.

This section quantifies impacts to wetlands, farmland, utilities, and residential and business structures that would result from implementing any of the D&RG conceptual alignments. This section also provides a summary of the community survey that was conducted in July 2003. Section 5.7, Comparison of the Environmental Consequences of the D&RG Conceptual Alignments to Alternative E, compares the impacts of the D&RG conceptual alignments and Alternative E.



**62 to 95 m (204 to 312 ft) ROW.** UDOT developed a 62 m (204 ft) cross-section to be used in conjunction with the 95 m (312 ft) cross-section. In essence, this is also a variable ROW that narrows to 62 m (204 ft) where the alignments cross wetlands or existing development. The 62 m (204 ft) cross-section shown in Figure 5-2 is the narrowest cross-section that could be built while maintaining design standards for the median, shoulders, travel lanes, clear zones, and a maintenance area outside the walls. This cross-section places retaining walls, and possibly noise walls, at the edge of the clear zone. This cross-section does not include a trail or berm. UDOT does not propose to build any alternative using this cross-section and is presenting the estimated cost and impacts for information only.



**Figure 5-2. 62 m (204 ft) Right-of-Way without Trail or Berm**

## 5.2 Wetland Impacts

Wetlands within the variable ROW (80 to 95 m, or 264 to 312 ft) of an alignment were considered directly impacted. The wetland impacts of the D&RG conceptual alignments were determined by evaluating both delineated wetlands and wetlands identified during the field survey. Table 5-1, below, lists the direct wetland impacts of the D&RG conceptual alignments. All D&RG conceptual alignments have the same alignment north of Parrish Lane and therefore have the same wetland impacts in the northern section. Figure 5-3 and Figure 5-4 below show the locations of these wetlands and distinguish between delineated wetlands and field-surveyed wetlands.

**Table 5-1. Wetland Impacts for 80 to 95 m  
(264 to 312 ft) Right-of-Way**

| <b>Alignment</b> | <b>Total Acreage Directly<br/>Impacted in Hectares<br/>(acres)<sup>a</sup></b> |
|------------------|--|
| DRG1 (80–95 m)   | 42 (105)   |
| DRG2 (80–95 m)   | 46 (114)   |
| DRG3 (80–95 m)   | 45 (111)   |
| DRG4 (80–95 m)   | 45 (110)   |
| DRG5 (80–95 m)   | 43 (106)   |

<sup>a</sup> Total impacts include impacts to wetlands delineated for the Final EIS and those identified through field reconnaissance of the D&RG conceptual alignments.

The impacts associated with the 62 to 95 m (204 to 312 ft) variable ROW are presented in Table 5-2. These impacts are presented for information only, as UDOT does not propose to build any alternative using this cross-section.

**Table 5-2. Wetland Impacts for 62 to 95 m  
(204 ft to 312 ft) Right-of-Way**

| <b>Alignment</b> | <b>Total Acreage Directly<br/>Impacted in Hectares<br/>(acres)<sup>a</sup></b> |
|------------------|--|
| DRG1 (62–95 m)   | 38 (93)  |
| DRG2 (62–95 m)   | 40 (99)  |
| DRG3 (62–95 m)   | 39 (97)  |
| DRG4 (62–95 m)   | 39 (96)  |
| DRG5 (62–95 m)   | 38 (93)  |

<sup>a</sup> These impacts are presented for information only.

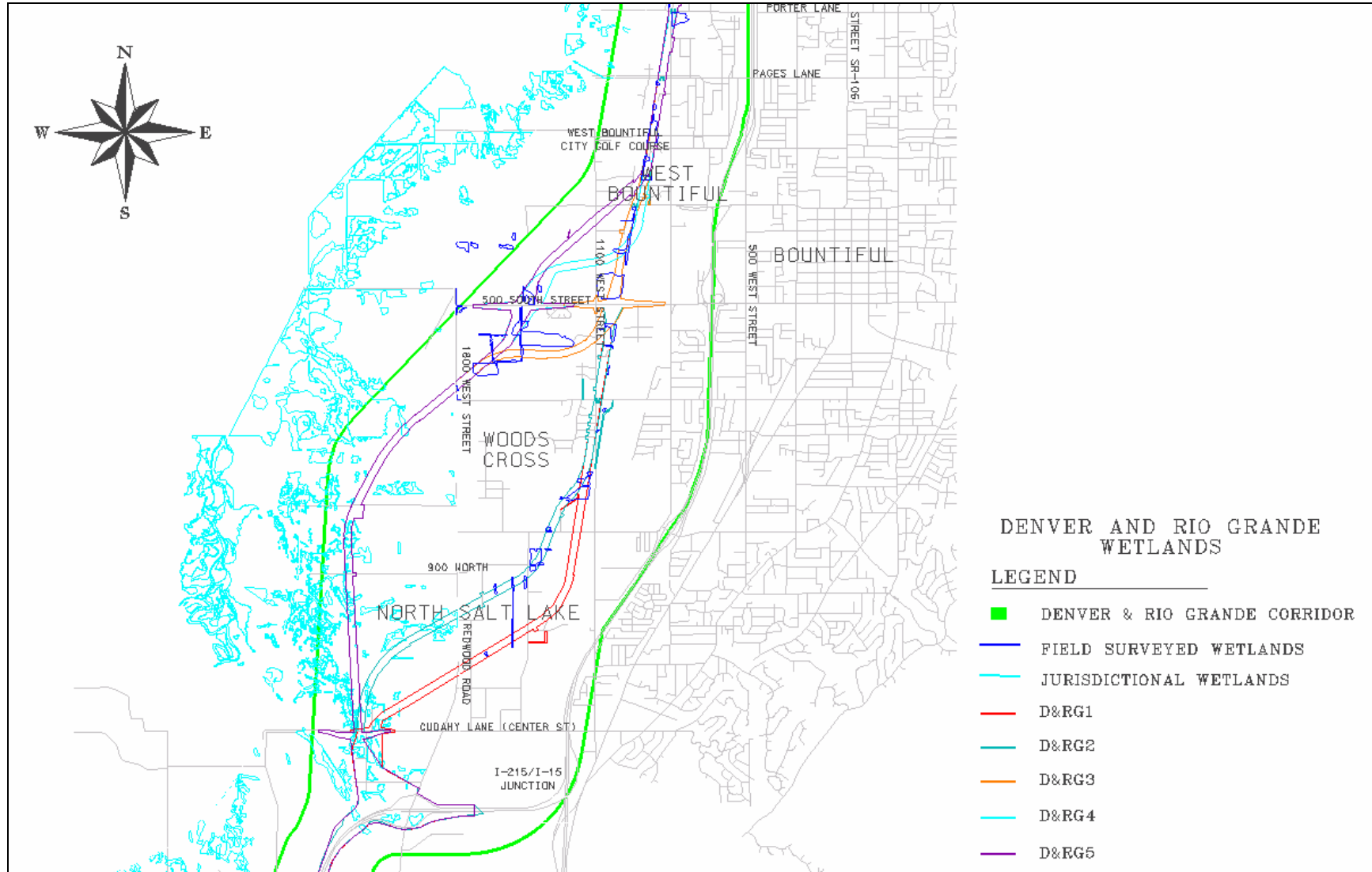


Figure 5-3. Wetlands between North Salt Lake and West Bountiful

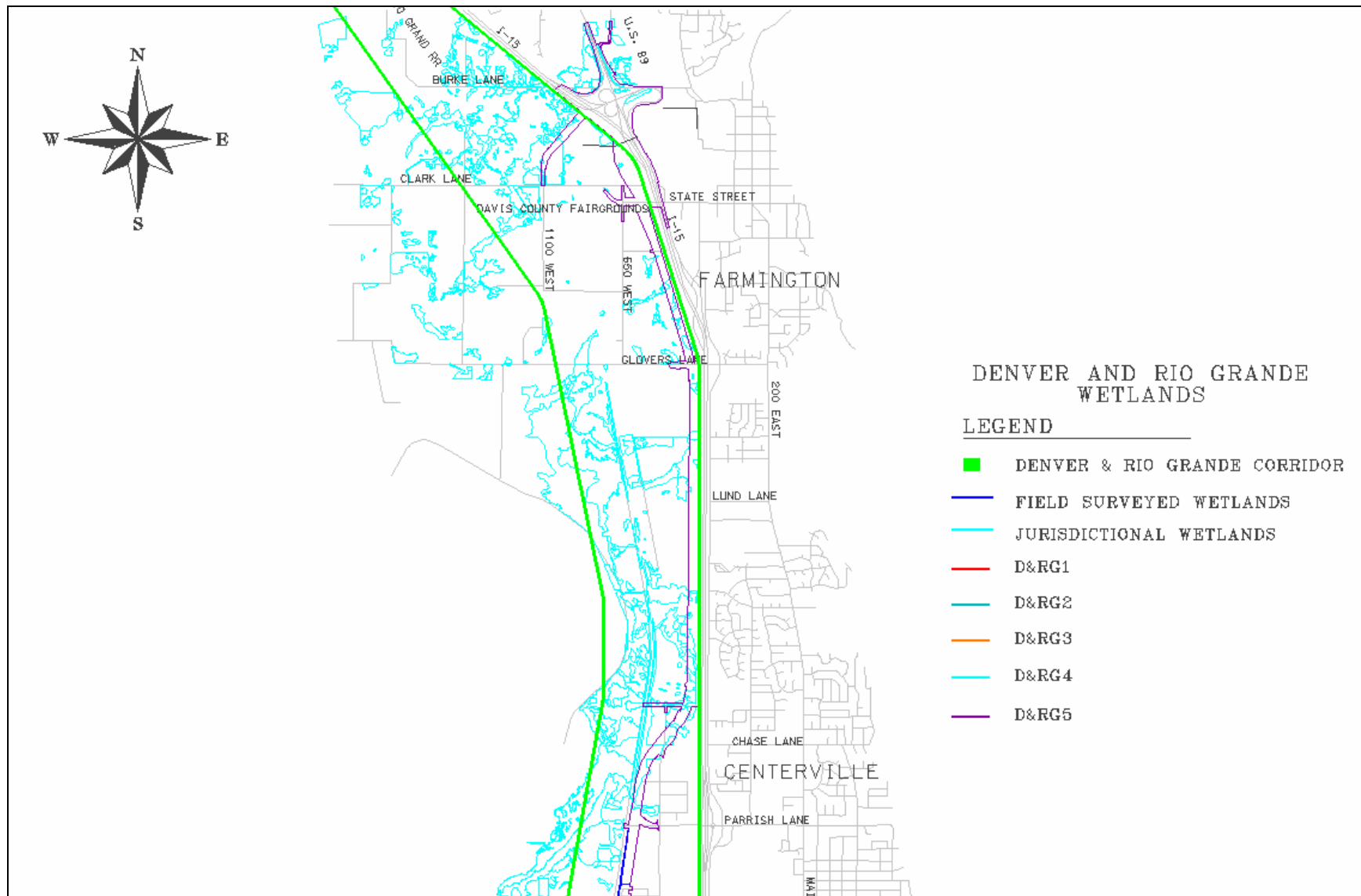


Figure 5-4. Wetlands between Centerville and Farmington

## 5.3 Farmland Impacts

Farmland impacts were evaluated based on compiled information from geographical information system (GIS) maps and Davis County parcel information. No field surveys were performed for this evaluation. This methodology is consistent with planning-level analysis.

The D&RG conceptual alignments would have direct impacts on prime farmland in the study area. A direct impact occurs when farmland falls within the ROW. Additional indirect impacts could be caused by access restrictions and fragmentation of existing farm fields, but these indirect impacts are not quantified.

### 5.3.1 Prime Farmlands

Prime farmland is land that possesses the best combination of physical and chemical characteristics for producing crops and is also actively managed for such a use (UDOT 2000). Impacts to prime farmlands are presented in Table 5-3, Figure 5-5, and Figure 5-6 below.

### 5.3.2 State Important Farmlands

The physical and chemical characteristics of state important farmland are of lower quality than those of prime farmland. Table 5-3, Figure 5-5, and Figure 5-6 below show that there are no direct impacts to state important farmland for any D&RG conceptual alignment.

**Table 5-3. Impacts to State and Prime Farmland<sup>a</sup>**

| Type of Farmland         | Area Impacts in Hectares (acres) |                   |                   |                   |                   |
|--------------------------|----------------------------------|-------------------|-------------------|-------------------|-------------------|
|                          | DRG1<br>(80–95 m)                | DRG2<br>(80–95 m) | DRG3<br>(80–95 m) | DRG4<br>(80–95 m) | DRG5<br>(80–95 m) |
| Prime farmland           | 12 (29)                          | 12 (29)           | 12 (29)           | 12 (29)           | 12 (29)           |
| State important farmland | 0 (0)                            | 0 (0)             | 0 (0)             | 0 (0)             | 0 (0)             |
| <b>Total</b>             | <b>12 (29)</b>                   | <b>12 (29)</b>    | <b>12 (29)</b>    | <b>12 (29)</b>    | <b>12 (29)</b>    |

<sup>a</sup> Farmland impacts associated with the 62 to 95 m (204 to 312 ft) ROW were not evaluated.



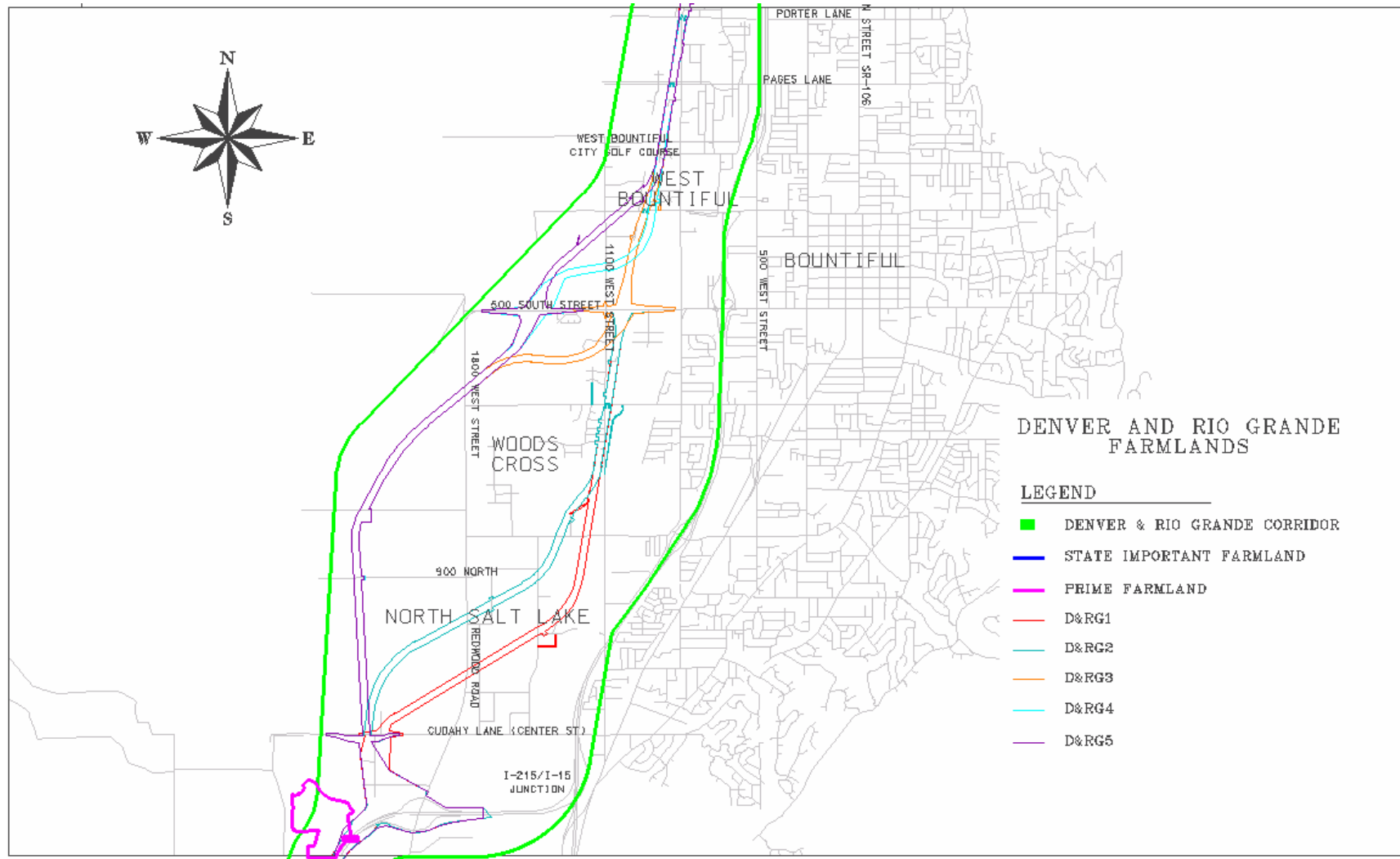


Figure 5-5. Farmland between North Salt Lake and West Bountiful

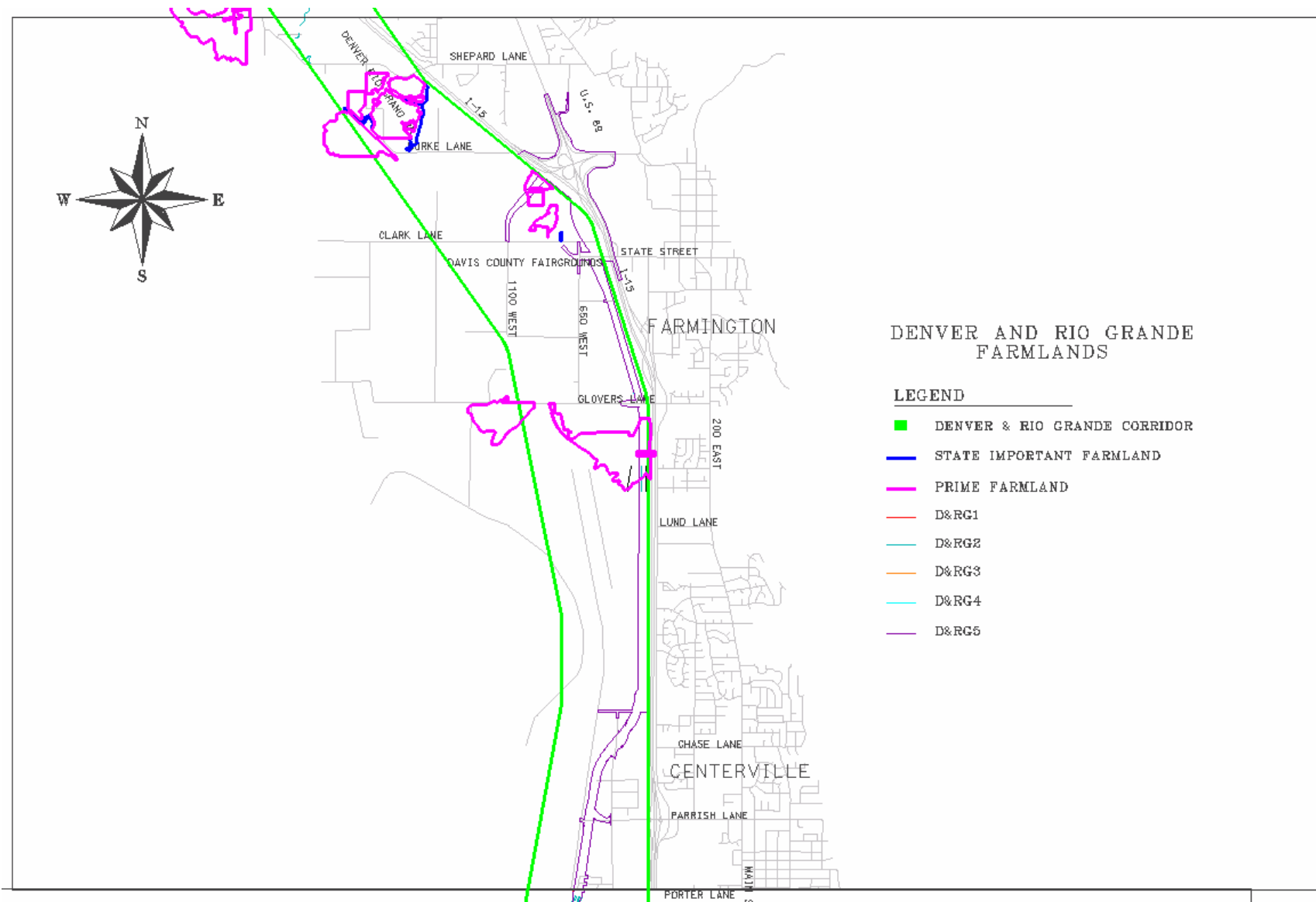


Figure 5-6. Farmland between West Bountiful and Farmington

## 5.4 Displacement Impacts

This section addresses the displacements that would be required to construct each of the D&RG conceptual alignments. Displacements were identified using GIS maps, aerial photographic imagery, field surveys, and Davis County parcel information. The D&RG conceptual alignments were developed to avoid the most densely developed residential and commercial areas.

A displacement occurs if a building is within the alignment ROW. Distinctions were made between residential, commercial, and industrial buildings in the field.. If a structure was outside the alignment ROW, no direct impact was recorded. Additional displacements could be required along some conceptual alignments to meet zoning and access requirements, but these additional impacts are not analyzed or quantified because a higher level of detail would be required to accurately determine these indirect impacts. As a result, the numbers presented in this section are the minimum number of displacements that would be required. Table 5-4 summarizes the displacements associated with the D&RG conceptual alignments.

**Table 5-4. Direct Impacts for 80 to 95 m (264 to 312 ft) Right-of-Way**

| Type of Displacement  | Impacts |
|-----------------------|---------|
| <b>DRG1 (80–95 m)</b> |         |
| Residential           | 193     |
| Business              | 86      |
| Total                 | 279     |
| <b>DRG2 (80–95 m)</b> |         |
| Residential           | 196     |
| Business              | 46      |
| Total                 | 242     |
| <b>DRG3 (80–95 m)</b> |         |
| Residential           | 129     |
| Business              | 39      |
| Total                 | 168     |
| <b>DRG4 (80–95 m)</b> |         |
| Residential           | 128     |
| Business              | 21      |
| Total                 | 149     |
| <b>DRG5 (80–95 m)</b> |         |
| Residential           | 139     |
| Business              | 20      |
| Total                 | 159     |

The impacts associated with the 62 to 95 m (204 to 312 ft) variable ROW are presented in Table 5-5. These impacts are presented for information only and for a comparison with the values presented in Table 5-4. UDOT does not propose to build any Legacy Parkway alternatives with this ROW width.

**Table 5-5. Direct Impacts for 62 to 95 m (204 to 312 ft) Right-of-Way**

| Type of Displacement   | Impacts <sup>a</sup> |
|--|----------------------|
| <b>DRG1 (62–95 m)</b>  |                      |
| Residential  | 190                  |
| Business   | 86                   |
| Total  | 276                  |
| <b>DRG2 (62–95 m)</b>  |                      |
| Residential  | 193                  |
| Business   | 45                   |
| Total  | 238                  |
| <b>DRG3 (62–95 m)</b>  |                      |
| Residential  | 128                  |
| Business   | 39                   |
| Total  | 167                  |
| <b>DRG4 (62–95 m)</b>  |                      |
| Residential  | 127                  |
| Business   | 21                   |
| Total  | 148                  |
| <b>DRG5 (62–95 m)</b>  |                      |
| Residential  | 135                  |
| Business   | 20                   |
| Total  | 155                  |
| <sup>a</sup> These impacts are presented for information only. |                      |

#### 5.4.1 Residences

Table 5-4 above summarizes the total residential and business displacement impacts by community for each D&RG conceptual alignment. The conceptual alignments have the same impacts in the northern part of the study area (north of Parrish Lane in Centerville and Farmington), so the following discussion focuses on the impacts through the communities of West Bountiful, Woods Cross, and North Salt Lake.

##### Alignment DRG1

DRG1 would displace 61 residential structures in Woods Cross and 123 residential structures in West Bountiful. As of April 2002, there were 2,239 housing units in Woods Cross (City of Woods Cross 2003). As a result,

constructing DRG1 would displace about 3% of the entire housing stock. There are 1,218 housing units in West Bountiful; the 123 residential structures in West Bountiful are 10% of the housing stock.<sup>1</sup>

### **Alignment DRG2**

DRG2 would displace a similar number of residential structures as DRG1; however, it would displace an additional 4 residential structures in Woods Cross. Of all the D&RG conceptual alignments, DRG2 would relocate the largest number of homes from Woods Cross (65) and would require the largest total number of residential relocations (190).

### **Alignment DRG3**

DRG3 would displace a similar number of residential structures in West Bountiful (121) as DRG1 and DRG2 (both with 123). However, impacts to residential structures in Woods Cross would be significantly lower, with only 6 displacements compared to 65 for DRG2. DRG3 would displace the lowest total number of residential structures (129) of all five D&RG conceptual alignments.

### **Alignment DRG4**

DRG4 would displace fewer residential structures in both Woods Cross and West Bountiful than DRG1, removing 118 structures in West Bountiful and 12 in Woods Cross.

### **Alignment DRG5**

DRG5 would displace 130 residential structures in West Bountiful and 12 residential structures in Woods Cross. Of all the D&RG conceptual alignments, DRG5 would displace the largest number of homes in West Bountiful (130).

## **5.4.2 Businesses**

Business buildings are impacted along the entire length of the D&RG conceptual alignments. Compared to the northern part, there is a greater concentration of employment land uses in the southern part of the study area. Businesses are generally more concentrated along the eastern edge of the study area, where the D&RG Railroad and I-15 are available for the distribution of goods and materials into and out of the region.

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<sup>1</sup> The total number of West Bountiful housing units was extracted from information provided by West Bountiful in the D&RG Technical Memorandum Community Impact Survey Minutes (DM #6425).

In Farmington, all five of the D&RG conceptual alignments are the same. Except for one privately owned parcel, the impacted buildings identified as industrial businesses in Farmington are primarily on parcels owned by public entities (Weber Basin Water Conservation District, Utah Department of Transportation, and the Utah Department of Administrative Services).

In addition to the many manufacturing facilities and warehouses in the study area, there are a number of petroleum refineries, which are listed in Table 5-6. Only a portion of land in the Holly Corporation and Silver Eagle properties would be impacted.

**Table 5-6. Petroleum-Processing Facilities**

| Refinery          |                      | Location           |
|-------------------|----------------------|--------------------|
| Chevron USA Inc.  | 2551 North 1100 West | Salt Lake City, UT |
| Silver Eagle      | 2355 South 1100 West | Woods Cross, UT    |
| Holly Corporation | 393 South 800 West   | Woods Cross, UT    |

### **Alignment DRG1**

DRG1 would displace 86 businesses, which is the largest number of displacements of any of the D&RG conceptual alignments. Of the 86 industrial displacements, 59% would occur in North Salt Lake. Specifically, a tank farm associated with Koch Asphalt in North Salt Lake would be displaced. Albertson's Food and Drug warehouse, North Salt Lake's largest employer, would also be displaced. Other notable businesses that would be displaced in North Salt Lake include Utah Paperbox, BMW Motorcycles, and Shamrock Plumbing. Several businesses in the Northwood Business Park would also be displaced. In West Bountiful, a portion of the Holly Corporation property would be impacted.

### **Alignment DRG2**

DRG2 would displace 46 businesses. Fewer industrial sites in North Salt Lake would be displaced by DRG2 (11) than by DRG1 (51) because the alignment is shifted farther north and west from the I-15 corridor.

### **Alignment DRG3**

DRG3 would displace 39 businesses. Most of the displacements in Woods Cross would be associated with constructing the 500 South interchange, and all of the business displacements in West Bountiful would be the same as those described for alignment DRG1.

### **Alignment DRG4**

DRG4 would displace 21 businesses. All of the displacements in Woods Cross would be associated with constructing the 500 South interchange.

### **Alignment DRG5**

DRG5 would displace 20 businesses. DRG4 and DRG5 have the fewest number of business displacements.

## **5.5 Utility Impacts**

For any project, it is important to avoid major utility line conflicts to the extent practical. Impacting utilities can increase the cost and duration of construction. Relocating a utility can have a negative effect on businesses. When the utility is not functioning, businesses and residences are inconvenienced and businesses could lose money. For new construction projects, UDOT's policy is to relocate utilities outside the roadway footprint. The utilities can be relocated within UDOT ROW, but not underneath the travel lanes. This policy avoids conflicts in maintaining traffic if a utility needs to be repaired or improved in the future. When the utility is located outside the travel lanes, traffic flow can be maintained while utility work is performed.

For liability reasons, utility companies also prefer that utilities are located outside the roadway. If the utility is within the roadway footprint, the utility could potentially be damaged if roadway embankments cause the underlying soils to settle. Utility companies also need to have access to their facilities at any time for emergencies, maintenance, and improvements.

Utilities cannot always be located outside the roadway, but the number and length of crossings should be kept to a minimum. If the utility must cross the highway, a perpendicular crossing is better for both the utility company and UDOT, since this reduces the overall length of the crossing. The locations of major utility lines in the study area are shown in Figure 3-8a through Figure 3-8e in the Final EIS. Consultation with local city engineers verified and provided insight into the location of these and other utilities.

### **5.5.1 Petroleum Pipelines**

Several major petroleum pipelines run through the North Corridor to supply processing plants in Woods Cross, North Salt Lake, and Salt Lake City. The petroleum pipelines in the North Corridor are described below and shown in Figure 5-7. In addition to the direct costs associated with relocating these utilities, owners could potentially lose money due to service disruptions.

**Tesoro Pipeline.** This line runs along the D&RG tracks through portions of North Salt Lake. The Tesoro line runs along 1100 West through Woods Cross and West Bountiful. The pipeline then follows the D&RG tracks through the entire northern part of the study area.

**Chevron Pipeline.** From its I-215 crossing, the Chevron pipeline runs northwest then north along Redwood Road. Once in Woods Cross, the line turns northeast to 500 South, then heads east along 500 South to 100 West. The pipeline follows the Tesoro pipeline through West Bountiful and Centerville. It continues along the D&RG tracks north through Farmington.

**Pioneer Pipeline.** The Pioneer pipeline runs along the Union Pacific Railroad tracks through North Salt Lake. In southern Woods Cross, the line follows the east side of the D&RG tracks through Woods Cross, West Bountiful, Centerville, and Farmington.

The number of crossings and the approximate length of the petroleum line impacts are shown in Table 5-7. The lines could be crossed perpendicularly or, in the case of the Pioneer pipeline, they could run parallel to the D&RG conceptual alignments, which would result in more miles of impacts.

**Table 5-7. Major Petroleum Pipeline Impacts**

| Alignment      | Tesoro                     | Chevron                    | Pioneer <sup>a</sup>       | Total                        |
|----------------|----------------------------|----------------------------|----------------------------|------------------------------|
| DRG1 (80–95 m) | 4 crossings<br>(0.75 mile) | 5 crossings<br>(1.2 miles) | 4 crossings<br>(2.4 miles) | 13 crossings<br>(4.35 miles) |
| DRG2 (80–95 m) | 1 crossing<br>(0.3 mile)   | 4 crossings<br>(0.9 mile)  | 4 crossings<br>(2.4 miles) | 9 crossings<br>(3.6 miles)   |
| DRG3 (80–95 m) | 1 crossing<br>(0.1 mile)   | 2 crossings<br>(0.3 mile)  | 1 crossing<br>(2.2 miles)  | 4 crossings<br>(2.6 miles)   |
| DRG4 (80–95 m) | 1 crossing<br>(0.1 mile)   | 2 crossings<br>(0.8 mile)  | 1 crossing<br>(1.9 miles)  | 4 crossings<br>(2.8 miles)   |
| DRG5 (80–95 m) | 1 crossing<br>(0.1 mile)   | 2 crossings<br>(0.8 mile)  | 1 crossing<br>(1.7 miles)  | 4 crossings<br>(2.6 miles)   |

<sup>a</sup> The Pioneer pipeline runs along the eastern side of the D&RG tracks, resulting in a longer impact length.



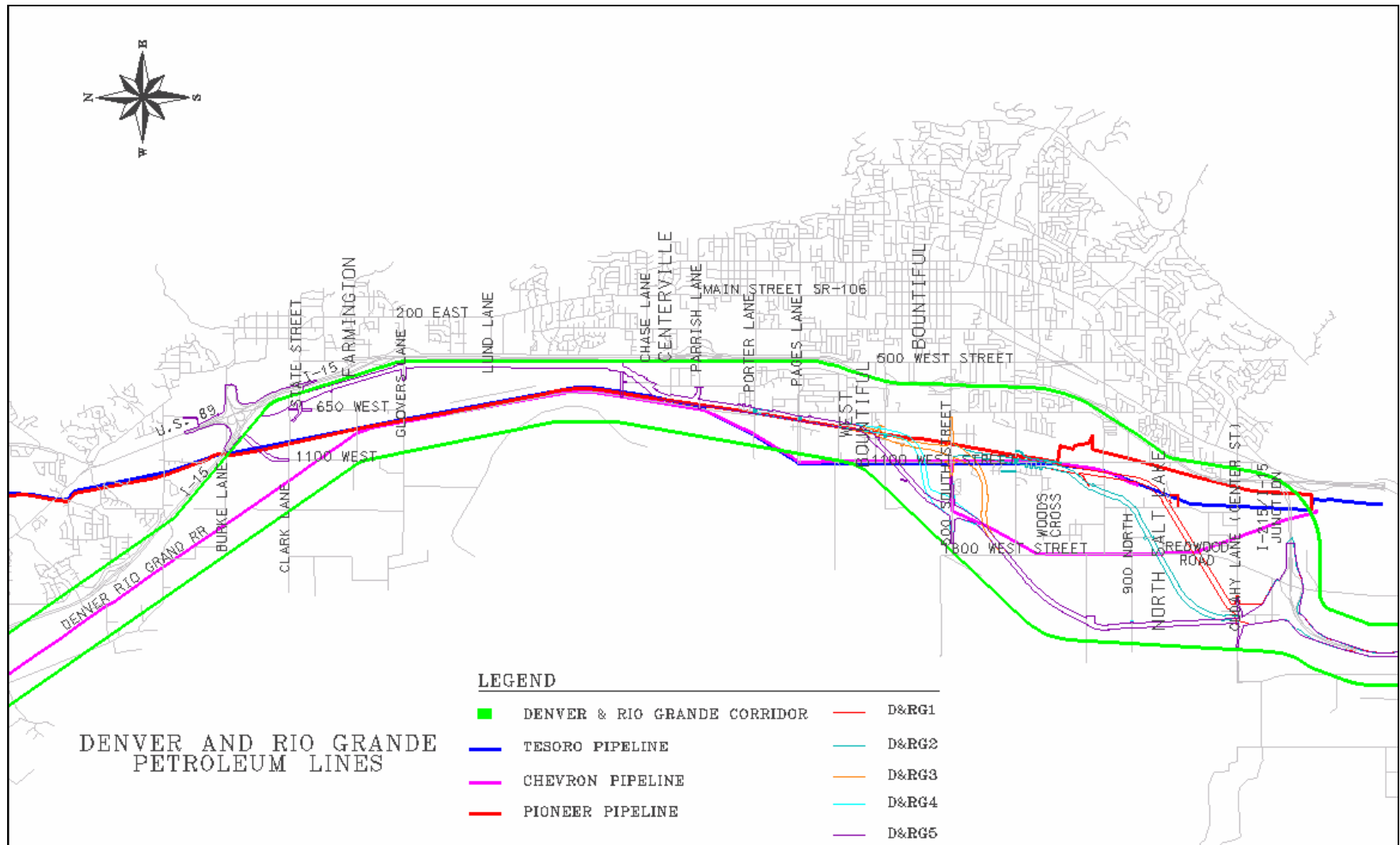


Figure 5-7. Major Petroleum Pipelines

### 5.5.2 Major Water Lines

This section describes the location of major drinking water delivery lines and the potential impacts of the D&RG conceptual alignments. The alignments are located in densely developed areas. Local utility infrastructure is in place to serve residences and businesses. Temporary service interruptions would result from relocating these lines or protecting these lines in place. Impacting a water utility adds significant complexity to the project, which could lead to construction delays and added costs. Relocating a water utility can have a negative effect on businesses. When the utility is not functioning, businesses are not only inconvenienced, but they could lose money as well.

Water lines are described relative to the various communities that would be impacted. Major water line conflicts are summarized below in Table 5-8 and shown in Figure 5-8, Major Water Lines, on page 39.

**North Salt Lake.** The major water utility lines in North Salt Lake, as identified in the Final EIS, run east to west along Center Street and south to north along Redwood Road. Conceptual alignments DRG1 and DRG2 would require crossing the North Salt Lake water lines at Redwood Road and Center Street. DRG1 would cross two lines along the D&RG tracks at 2600 South.

**Woods Cross.** Several major water transmission lines crisscross the area surrounding the D&RG tracks in Woods Cross. Two important municipal drinking water wells are located immediately west of the D&RG tracks (see Appendix B, Community Survey).

Conceptual alignments DRG1 and DRG2 would also result in relocation of major water lines because all of these lines originate at the two municipal wells. Although the conceptual alignments would avoid directly impacting these wells, they would require relocation of several of the adjacent water lines, including some that run along the D&RG tracks. Two major lines that run along 1100 West would need to be relocated, as well as a line running along 1500 South. These conceptual alignments would require relocating two other water lines, one located south of 1500 South running west from the wells and another running west north of 1500 West.

Conceptual alignments DRG3, DRG4, and DRG5 would require relocating two of Woods Cross's water lines south of 500 South.

**West Bountiful.** Two of West Bountiful's major water lines run along 400 North and the D&RG tracks through the city. All conceptual alignments would require relocating the water lines running along the tracks at 500 South and at 400 North

and the other water line at about 1100 West. In addition, because all alignments run through a developed area of West Bountiful, there is a high potential to relocate several water lines that branch off the major transmission line to service area homes and businesses.

**Centerville and Farmington.** The D&RG conceptual alignments are the same through Centerville and Farmington. The alignments would impact a water line near Chase Lane in Centerville where the alignments diverge from the D&RG tracks and head northeast to I-15. Three water lines would be impacted in Farmington: one north of Glover's Lane, another at State Street (Clark Lane), and a third by the extension of 1100 West.

Table 5-8 shows the number of major water line crossings for each of the D&RG conceptual alignments. The area of greatest concern is at 1500 South in Woods Cross where four to five major water lines originate from two municipal drinking water wells.

**Table 5-8. Major Water Line Crossings**

| Alignment      | North Salt Lake | Woods Cross | West Bountiful | Centerville/Farmington | Total Relocations |
|----------------|-----------------|-------------|----------------|------------------------|-------------------|
| DRG1 (80–95 m) | 4               | 5           | 2              | 4                      | 15                |
| DRG2 (80–95 m) | 2               | 5           | 2              | 4                      | 13                |
| DRG3 (80–95 m) | 1               | 2           | 2              | 4                      | 9                 |
| DRG4 (80–95 m) | 1               | 3           | 2              | 4                      | 10                |
| DRG5 (80–95 m) | 1               | 2           | 2              | 4                      | 9                 |

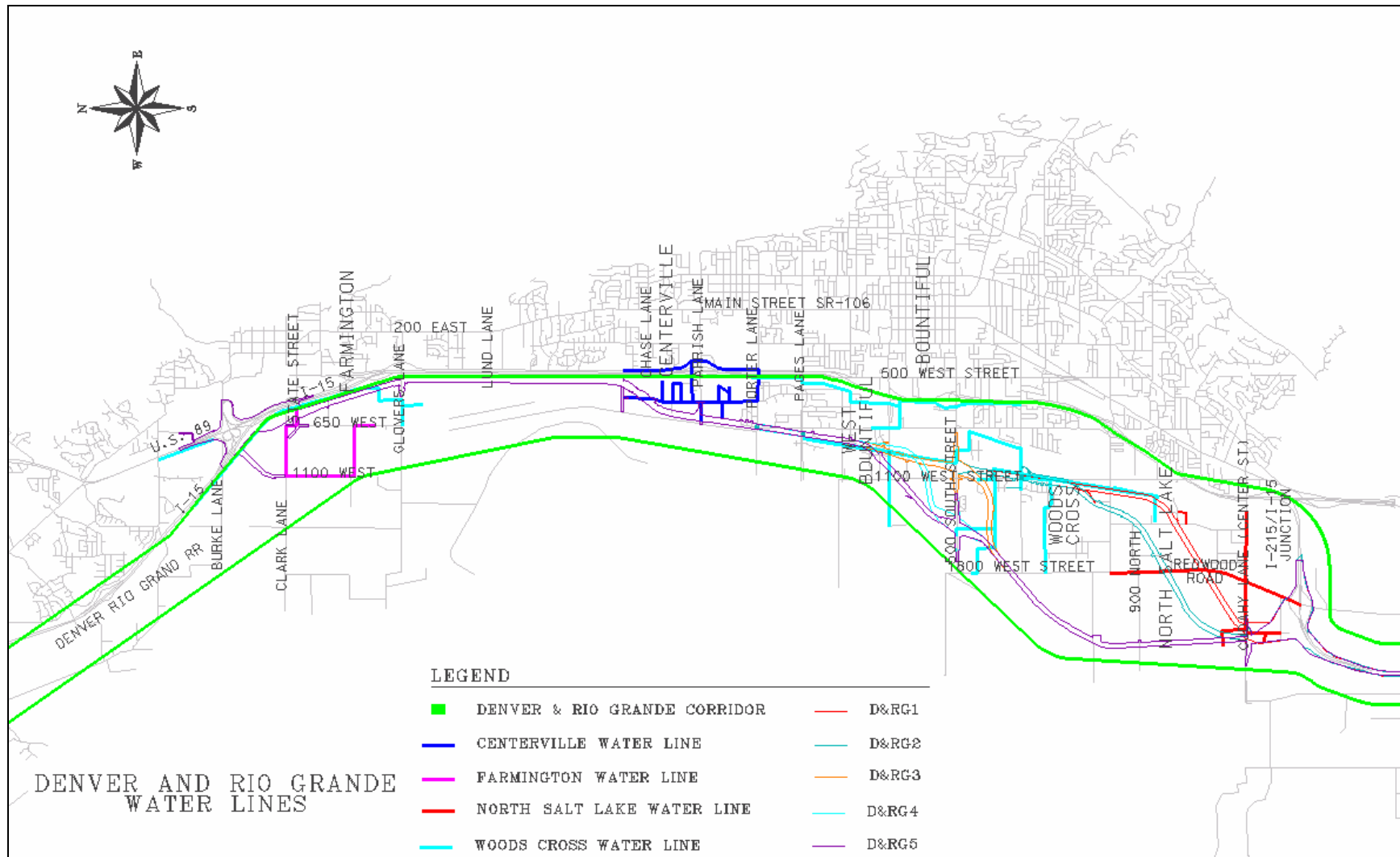


Figure 5-8. Major Water Lines

### 5.5.3 Major Electrical Distribution Lines

Two of PacifiCorp's major power utility lines transect the study area. These lines run generally southwest to northeast through the southern part of the North Corridor, then turn to head north through the remainder of the study area. These major transmission lines are all west of the proposed D&RG conceptual alignments. The alignments overlay local distribution lines that might require relocation.

### 5.5.4 Natural Gas

The Final EIS shows a major natural gas line running southwest to northeast across the southern part of the North Corridor study area. The gas line crosses the D&RG tracks between Porter and Parrish Lanes and turns northwest in Centerville. All D&RG conceptual alignments would impact this utility in two locations: once between Porter and Parrish Lanes and again at Chase Lane. There is also a potential to impact natural gas lines that service the developed areas surrounding the alignments.

### 5.5.5 Telecommunications

All major telephone lines are east of I-15. There is a fiber optic line that runs along the west side of the D&RG tracks through Centerville. Because the D&RG conceptual alignments would be on the east side of the tracks through Centerville, the alignments would not impact this utility.

### 5.5.6 Utility Impacts Summary

The major utilities of greatest concern with respect to the D&RG conceptual alignments are petroleum pipelines and water transmission lines. The impacts of the conceptual alignments on all other major utilities would be similar.

Petroleum pipelines operated by Tesoro, Chevron, and Pioneer pass through all the communities in south Davis County. The D&RG alignments would require relocating pipelines that run adjacent to the D&RG tracks in North Salt Lake, Woods Cross, and West Bountiful in particular. Affecting these utilities might result in additional indirect impacts to other resources associated with relocating these lines.

Section 5.5.2, Major Water Lines, describes the location of area water lines and the required relocations due to the location of the D&RG conceptual alignments. These alignments would require relocating not only several major water transmission lines, but also the water lines servicing the developed areas surrounding

the D&RG tracks. Table 5-9 summarizes the impacts of the D&RG conceptual alignments on water and petroleum pipelines.

**Table 5-9. Major Utility Relocations<sup>2</sup>**

| Alignment      | Petroleum Pipeline Relocations | Water Line Relocations |
|----------------|--------------------------------|------------------------|
| DRG1 (80–95 m) | 13                             | 15                     |
| DRG2 (80–95 m) | 9                              | 13                     |
| DRG3 (80–95 m) | 4                              | 9                      |
| DRG4 (80–95 m) | 4                              | 10                     |
| DRG5 (80–95 m) | 4                              | 9                      |

## 5.6 Community Disruption Effects

### 5.6.1 Community Survey

Community representatives were consulted to establish the potential socioeconomic impacts of placing an alignment within the D&RG corridor. Project team members met individually with representatives of Davis County and communities in south Davis County where the alignments were located. Community leaders also had the opportunity to give feedback on the D&RG conceptual alignments in the public forum of the CPIC meeting on July 10, 2003. Information gathered through these efforts is summarized below. Minutes from the individual meetings are in Appendix B, Community Survey.

#### North Salt Lake

A meeting with Mayor Kay Briggs and other North Salt Lake representatives was held on July 15, 2003. The main concerns of North Salt Lake are summarized below.

**Business Impacts.** Alignments DRG1 and DRG2 would significantly impact businesses located between the D&RG tracks and Redwood Road. Impacts would include not only direct impacts to existing businesses but also changing access routes to other businesses, which could possibly result in other indirect impacts of other companies moving out of the area. These impacts would eliminate a large portion of the tax base for the city. DRG1 would result in 51 business relocations.

<sup>2</sup> Utility impacts associated with the 62 to 95 m (204 to 312 ft) ROW were not evaluated.

***Consistency with General Plans.*** The D&RG conceptual alignments are not consistent with the North Salt Lake general plan, which resulted from 40 years of planning efforts. It would take additional time, money, and public involvement to revise the general plan to incorporate a Legacy alignment in the D&RG corridor.

***Future Developments.*** Alignments DRG1 and DRG2 would impact a planned future development west of Redwood Road north of Center Street. In addition, North Salt Lake felt that the alignments would not provide the western boundary to development that Alternative E and the mitigation plan would have provided. North Salt Lake fears that this area will become a “junkyard” if not controlled.

### **Woods Cross**

A meeting was held on July 10, 2003, with City Administrator Gary Uresk and Community Development Director Tim Stephens. The concerns of Woods Cross are summarized below.

***Residential Relocations and Quality of Life.*** The D&RG alignments would impact citizens’ quality of life and community cohesion by bisecting a community already divided by Union Pacific and D&RG rail lines, US 89, and I-15. Adding another barrier would create islands of developed areas between the Union Pacific rail line and the D&RG, for example. A D&RG alignment would also be wider than the existing D&RG rail line ROW and would increase noise along the corridor. Woods Cross believes that the alignments would cause community instability as established residences are relocated and replaced with a greater number of rental properties. The City feels that rental properties have less value than permanent residences in terms of community cohesion and will lower the overall property value of the surrounding area.

***Consistency with General Plans.*** The D&RG alignments are not consistent with Woods Cross’s recently adopted general plan. The alignments would undermine 5 years’ worth of planning efforts, which included significant public input. Their general plan incorporates the Final EIS Legacy Parkway Preferred Alternative.

### **West Bountiful**

A meeting with West Bountiful representatives was held on July 10, 2003. The main concerns of West Bountiful are summarized below.

***Residential Relocations and Quality of Life.*** The number of residential relocations that would result from the D&RG alignments is about 12% of West Bountiful’s total single-family residences. The alignments would also bisect the communities and, as a result, adversely impact community cohesion.

**Business Impacts.** The more easterly 500 South interchange location that is associated with D&RG alignments DRG1 and DRG2 would eliminate a large commercial area of the city. Eliminating this area would reduce the City's annual property revenue by as much as 13%.

**Visual Impacts.** West Bountiful feels that a highway within the D&RG corridor would be very intrusive because of the height of structures and noise walls that would be required. West Bountiful is especially concerned about the visual impacts near its public golf course.

### **Centerville**

Representatives with the City of Centerville were consulted on July 8, 2003. The D&RG alignments are in the same location as Alternative E (adjacent to the Union Pacific Railroad tracks, which are immediately west of I-15) through much of Centerville. The City of Centerville's comment on the potential impacts of the D&RG alignments is summarized below. The City said they would prefer an alignment farther west than Alternative E that follows the existing D&RG tracks through their city.

**Commercial Development.** The D&RG alignments would impact a planned commercial development located at Centerville's southern boundary, between Porter and Parrish Lanes. Any impacts to future developments would be significant because of Centerville's limited commercial and industrial tax base.

### **Farmington**

Representatives with the City of Farmington were consulted on July 8, 2003. The D&RG alignments are in the same location as Alternative E (adjacent to the Union Pacific Railroad tracks, which are immediately west of I-15) through Farmington. The discussion centered on the narrower typical cross-section. The City of Farmington supports a trail within the ROW, but would not support a facility that lacked a landscaped berm.

### **Davis County**

A meeting with Barry Burton, Assistant Director of Community and Economic Development for Davis County, was held on July 11, 2003. Mr. Burton pointed out the tremendous negative impacts that all the D&RG alignments would have on homes and businesses throughout southern Davis County.



## 5.6.2 Community Impacts Analysis

The D&RG alignments in the northern portion of the study area (Farmington and Centerville) are the same as Alternative E, as the analysis in the Final EIS determined that this alignment is the least environmentally damaging alignment in this area. Therefore, the impacts of the D&RG alignments on these communities are similar to those from the Final EIS Preferred Alternative. However, the D&RG alignments would have different impacts than Alternative E in the southern part of the study area, particularly in North Salt Lake, Woods Cross, and West Bountiful.

The community leaders from most southern Davis County communities did not support any highway alignment that moved the Legacy Parkway farther east into the D&RG regional corridor. The one exception is the City of Centerville. Centerville representatives prefer an alignment along the D&RG right-of-way, which is actually located west of Alternative E in the city's boundaries. As summarized in the previous section, these communities cited severe residential and business displacements, losses to the city's tax base, negative impacts to community cohesion and quality of life, negative impacts on travel patterns and accessibility, and unsightly visual impacts as the major reasons for their disapproval.

Community impacts were not specifically evaluated for the 62 to 95 m (204 to 312 ft) ROW. However, given the small differences in displacement impacts (shown in Table 5-10 below), the community impacts would be the same as alternatives with the 80 to 95 m (264 to 312 ft) ROW.

**Table 5-10. Comparison of Displacement Impacts between 80 to 95 m and 62 to 95 m Right-of-Way Widths**

| Type of Displacement   | 80 to 95 m (264 to 312 ft) ROW | 62 to 95 m (204 to 312 ft) ROW <sup>a</sup> |
|--|--------------------------------|---|
| <b>DRG1</b>  |                                |   |
| Residential  | 193                            | 190   |
| Business   | 86                             | 86  |
| Total  | 279                            | 276   |
| <b>DRG2</b>  |                                |   |
| Residential  | 196                            | 193   |
| Business   | 46                             | 45  |
| Total  | 242                            | 438   |
| <b>DRG3</b>  |                                |   |
| Residential  | 129                            | 128   |
| Business   | 39                             | 39  |
| Total  | 168                            | 167   |
| <b>DRG4</b>  |                                |   |
| Residential  | 128                            | 127   |
| Business   | 21                             | 21  |
| Total  | 149                            | 148   |
| <b>DRG5</b>  |                                |   |
| Residential  | 139                            | 135   |
| Business   | 20                             | 20  |
| Total  | 159                            | 155   |
| <sup>a</sup> These impacts are presented for information only. |                                |   |

## 5.7 Comparison of the Environmental Consequences of the D&RG Conceptual Alignments to Alternative E

Table 5-11 below compares the impacts of the D&RG conceptual alignments and Alternative E on environmental resources. Note that the impacts of Alternative E were evaluated using a 95 m wide (312 ft wide) ROW width. As described in Section 4.1, Description of D&RG Conceptual Alignments, the D&RG conceptual alignments and Alternative E share the same alignment in the north portion of the study area, or from Parrish Lane to the northern terminus.

**Table 5-11. Comparative D&RG and Alternative E Impact Summary**

| Alignment                  | Hectares (Acres) Lost |                | Displacements                                      | Major Utility Impacts                      |
|----------------------------|-----------------------|----------------|--|--|
|                            | Wetlands              | Prime Farmland |  |  |
| DRG1 (80–95 m)             | 42 (105)              | 12 (29)        | Residential–193<br>Business–86<br><b>Total–279</b> | Petroleum–13<br>Water–15                   |
| DRG2 (80–95 m)             | 46 (114)              | 12 (29)        | Residential–196<br>Business–46<br><b>Total–242</b> | Petroleum–9<br>Water–13                    |
| DRG3 (80–95 m)             | 45 (111)              | 12 (29)        | Residential–129<br>Business–39<br><b>Total–168</b> | Petroleum–4<br>Water–9                     |
| DRG4 (80–95 m)             | 45 (110)              | 12 (29)        | Residential–128<br>Business–21<br><b>Total–149</b> | Petroleum–4<br>Water–10                    |
| DRG5 (80–95 m)             | 43 (106)              | 12 (29)        | Residential–139<br>Business–20<br><b>Total–159</b> | Petroleum–4<br>Water–9                     |
| Alternative E<br>(80–95 m) | 46 (113)              | 12 (29)        | Residential–4<br>Business–14<br><b>Total–18</b>    | Petroleum–5<br>Water–6<br>Power–5<br>Gas–5 |

### 5.7.1 Environmental Impacts

#### Wetlands

The D&RG alignment with the least amount of wetland impacts, DRG1, would impact about 105 acres, which is 8 fewer acres than Alternative E (113 acres). The wetland impacts of Alternative E were based on delineated jurisdictional wetlands; the wetland impacts of the D&RG alignments were based on a combination of delineated wetlands and wetlands identified during field surveys.

### **Farmland**

The D&RG alignments impact the same amount of prime farmland acreage as Alternative E.

### **Displacements**

All D&RG alignments would result in considerably more residential and business displacements than Alternative E. The D&RG alignment with the least amount of displacements, DRG4, would displace 128 residences and 21 businesses, which is considerably more than Alternative E with 4 residential and 14 business displacements.

### **Major Utilities**

Of particular concern is the number of major petroleum pipeline and water distribution line impacts that would result from any of the D&RG alignments. Section 5.5.1, Petroleum Pipelines, describes the location of several major petroleum transmission pipelines that run adjacent to the D&RG tracks through North Salt Lake, Woods Cross, and West Bountiful. While the number of petroleum line impacts is similar, the total length of major petroleum line impacts would be greater for the D&RG alignments compared to Alternative E. As described in Section 5.5.2, Major Water Lines, several water transmission lines that originate from municipal water wells adjacent to the D&RG tracks crisscross the area in Woods Cross.

Because Alternative E is located at the western edge of development, the total number of impacts considering both major transmission lines (water and petroleum) and minor service lines (natural gas, power, water, telephone, and sewer) is expected to be greater for the D&RG alignments because they are located in a more densely developed area.

## **5.7.2 Community Concerns**

All of the community representatives surveyed disapproved of all the D&RG alignments. The communities of North Salt Lake, Woods Cross, and West Bountiful would be particularly impacted by any of the D&RG alignments. These communities cited community division and impacts to tax bases that would result from the significant number of residential and business relocations as two of their most important concerns. Meeting notes are attached as Appendix B, Community Survey.

## 6.0 Alignment-Specific Cost Estimates

### 6.1 80 to 95 m (264 to 312 ft) Right-of-Way Width

Cost estimates were developed for the specific conceptual alignments within the D&RG corridor as well as for an alternative that follows the Alternative E alignment. These cost estimates were based on a variable ROW of 80 to 95 m (264 to 312 ft). These estimates are provided as Appendix C, Alignment-Specific Cost Estimates. Table 6-1 shows the costs for each specific D&RG conceptual alignment. The table shows that the refined alignment-specific estimates are lower than the estimates developed using the regional corridor-level approach. The reason for the difference is that the refined alignment-specific cost estimates have fewer unknowns and therefore used lower contingencies.

**Table 6-1. Alignment-Specific Costs for 80 to 95 m (264 to 312 ft) Right-of-Way**

| <b>Alignment<br/>(80 to 95 m)</b> | <b>Alignment-<br/>Specific Cost<br/>(millions)</b> | <b>Cost Difference<br/>Alternative E<br/>(millions)</b> | <b>Percent Cost<br/>Increase over<br/>Alternative E</b> |
|-----------------------------------|--|---|---|
| Alternative E                     | \$416  | —   | —   |
| DRG1                              | \$611  | \$195   | 47%   |
| DRG2                              | \$608  | \$192   | 46%   |
| DRG3                              | \$532  | \$116   | 28%   |
| DRG4                              | \$516  | \$100   | 25%   |
| DRG5                              | \$515  | \$99  | 24%   |

### 6.2 62 to 95 m (204 to 312 ft) Right-of-Way Width

The costs associated with the 62 to 95 m (204 to 312 ft) variable ROW are presented below in Table 6-2. These costs are presented for information only, as UDOT does not propose to build any alternative using this cross-section.

The estimated ROW costs for D&RG alignments with 62 to 95 m (204 to 312 ft) ROW width were determined on a parcel-by-parcel basis. Each D&RG alignment was evaluated to determine if using the 62 m (204 ft) ROW would prevent any residential or business relocations or reduce wetland impacts. In areas where reducing the ROW could result in a property impact savings, the ROW estimates were updated to reflect this savings. In areas where the narrower cross-section was used, additional costs were added to account for additional retaining walls. Costs were also added to account for the required barrier along both sides of the roadway. Earthwork costs were reduced for placing walls at the edge of clear

zone whereby reducing the amount of soil needed for the roadway. Cost were further reduced to account for reduced wetland impacts and, therefore, less wetland mitigation. See Appendix D, D&RG 62 to 95 m (204 to 312ft) Cost Estimates, for detailed cost estimates for the D&RG alternatives using the 62 m (204 ft) ROW width.

Overall, the costs estimates were unchanged with the use of the narrower cross-section. This was due to the additional costs added to account for expanded retaining walls and barrier, which offset the cost of reduced earthwork, reduced ROW, and less wetland mitigation. Because only 1 to 4 displacements could be avoided by using the narrower cross section, the ROW cost estimates did not change significantly (\$0.8 to \$1.1 million) when compared the total ROW cost estimate (\$63 to \$176 million).

**Table 6-2. Alignment-Specific Costs for 62 to 95 m (204 to 312 ft) Right-of-Way**

| <b>Alignment<br/>(62 to 95 m)</b> | <b>Alignment-Specific<br/>Cost (62 to 95 m)<br/>(millions)<sup>a</sup></b> | <b>Alignment-<br/>Specific Cost<br/>(80 to 95 m)<br/>(millions)</b> | <b>Cost<br/>Difference<sup>b</sup><br/>(millions)</b> |
|-----------------------------------|--|---|---|
| Alternative E                     | \$414  | \$416   | \$2   |
| DRG1                              | \$612  | \$611   | \$1   |
| DRG2                              | \$608  | \$608   | \$0   |
| DRG3                              | \$533  | \$532   | \$1   |
| DRG4                              | \$516  | \$516   | \$0   |
| DRG5                              | \$515  | \$515   | \$0   |

<sup>a</sup> These costs are presented for information only.

<sup>b</sup> The cost differences were calculated from the numbers presented in the table, which were rounded to the nearest million dollars. For more accurate estimates of the cost differences, see Appendix D.

## 7.0 Glossary

|                 |   |
|-----------------|---|
| AASHTO          | American Association of State Highway and Transportation Officials  |
| CFR             | Code of Federal Regulations   |
| CPIC            | Community Planning Input Committee  |
| D&RG            | Denver & Rio Grande (Railroad)  |
| direct impacts  | Direct effects of the project “which are caused by the action and occur at the same time and place” (40 CFR 1508.8) as the project is implemented.                                    |
| EIS             | Environmental Impact Statement  |
| FHWA            | Federal Highway Administration  |
| ft              | feet  |
| ft <sup>2</sup> | square feet   |
| GIS             | geographical information system   |
| I-15            | Interstate 15   |
| I-215           | Interstate 215  |
| I-80            | Interstate 80   |
| km              | kilometers  |
| m               | meters  |
| m <sup>2</sup>  | square meters   |
| mi              | miles   |
| NEPA            | National Environmental Policy Act   |
| ROW             | right-of-way  |
| Section 4(f)    | Section 4(f) of the 1966 U.S. Department of Transportation Act (recodified in 1983 as U.S.C. 303) provides special land use protections to parks, recreation facilities, and refuges. |
| UDOT            | Utah Department of Transportation   |
| UPRR            | Union Pacific Railroad  |
| U.S.            | United States   |
| U.S.C.          | United States Code  |
| US 89           | U.S. Highway 89   |
| USACE           | U.S. Army Corps of Engineers  |
| WFRC            | Wasatch Front Regional Council  |

## 8.0 References

- City of Woods Cross. 2003. Woods Cross Draft General Plan. February.
- HDR Engineering, Inc. 2004. Legacy Parkway Technical Memorandum: Right-of-Way Issues. November.
- McConkie, Dannie. 2000. Letter from McConkie, Wasatch Front Regional Council, to Tom Warne of UDOT regarding future facilities north and west of the Salt Lake International Airport. September 22.
- Transportation Equity Act for the 21st Century. Enacted June 9, 1998. Public Law 105-178.
- U.S. Court of Appeals, 10th Circuit. 2002. *Utahns for Better Transportation et al. v. United States Department of Transportation et al.* No. 01-4216.
- [UDOT] Utah Department of Transportation. 2000. *Legacy Parkway Final Environmental Impact Statement and Section 4(f), 6(f) Evaluation*. June.
- Warne, Thomas R. 2000. Letter from Warne, UDOT, to Utah Transportation Commission regarding future facilities north and west of the Salt Lake International Airport. October 23.



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## APPENDIX A

### REGIONAL CORRIDOR COST ESTIMATES

## General Notes:

The cost estimates for the regional alternatives are based on several assumptions and unit costs presented below.

- 1 Roadway concrete costs are based on UDOT average bid prices.
- 2 Roadway concrete pavement 12" thick @ ~\$41/m<sup>2</sup> for concrete. Add basecourse at \$10/m<sup>3</sup> assuming 2' (0.61 m) thick or \$6/m<sup>2</sup>. All regional alignments assume a pavement width of 23 m. See attached documentation.
- 3 Trail Pavement costs \$14/m<sup>2</sup> are based on UDOT bid items using a 6" asphalt (2.4 m wide) pavement. The cost for mulch (equestrians) (2.0 m wide) is \$0.40/m<sup>2</sup>, see attached documentation.
- 4 The earthwork prism area used was 145m<sup>2</sup>. This value was multiplied by the length of the highway on land to come up with a total earthwork cost, see attached documentation.
- 5 Earthwork cost is \$9.83/m<sup>3</sup>, see attached documentation.
- 6 The proposed 312 ft section does not call for barrier.
- 7 A geotextile material is assumed to be placed underneath all roadway fill material. A width of 54 m and a length equal to the specific alignment is used to calculate the quantity.
- 8 Geotextile material cost of \$2/m is based on average UDOT bid items, 020750020, 30, and 50, see attached documentation.
- 9 For roadway stormwater management; 66m of 24" reinforced concrete pipe (RCP) with catch basins are assumed every 100 meter and 66m of 36" RCP every 500 M.
- 10 24" RCP cost of \$110/m and 36" RCP cost of \$160/m is used and based on average UDOT bid item, 026100428 & 026100432, see attached documentation.
- 11 Structure cost of \$1200/m<sup>2</sup> of bridge deck see attached documentation.
- 12 Structure costs also include costs for over crossings. Each crossing is approx \$2,178,000 assuming a 33-m wide and 55-m long span, equaling 1815m<sup>2</sup> for each crossing. See each alternative for identified cross street locations.
- 13 To account for system interchanges 72,500m<sup>2</sup> of structure area was added to each alternative, see attached documentation.
- 14 To account for system interchanges; 1,444,446 m<sup>3</sup> of earthwork was added, see attached documentation.
- 15 Two diamond interchanges at 500 South and Parrish Lane are assumed for the eastern alternatives (see each alternative). Costs include \$2,178,000 for structure, and \$603,000 for earthwork, totaling \$2,781,000.
- 16 Box culverts at a length of 100 m per stream or canal crossings. Cost of \$1800/each (6'x6' prefabricated) is based on UDOT average bid prices, see attached documentation.
- 17 Striping cost is \$1.00/m based on average bid prices, see attached documentation, 027650060.
- 18 Striping is the length times 4.5, to account for 4 solid shoulder lines, and 2 skip lane lines.
- 19 Fencing includes both sides of the ROW and between trail and roadway. Add 5% for variations around bridges, drainage structures and trail access points.
- 20 Fence cost from UDOT average bid items is \$29/m, including gates, 028210018. See attached documentation.
- 21 Traffic Control cost of \$2,053,851 is lump sum based on cost for another project. A base cost of 5,000,000 is assumed and increased 10% for RR flagging, see attached documentation. 10% increased costs for traffic control for the D&RG and UP alternatives due to high density.
- 22 Landscaping base cost of \$10,000,000 is the proposed project budget. Cost is adjusted for specific regional alignments examining the overall location of the alternative and the areas not on structure. Extensive landscaping is planned for areas with berm and adjacent to the trail, these will be planted with trees and shrubs, native grasses will be used in the median and along roadway side slopes.
- 23 Lighting costs assume lighting the interchanges only. Estimate uses \$300,000 per diamond interchange (2) and \$1,200,000 for system to system interchanges (2) for a total of \$3,000,000. See attached documentation.

- 24 Major Utility relocation costs are based on professional judgment and knowledge of the area and is estimated at \$13,500,000 for the Great Salt Lake alternative. Cost includes but is not limited to major petroleum lines, sanitary sewer, and water lines. The farther west the alignment the cost decreases, the farther east the costs increase.
- 25 ATMS cost are \$280,000 per mile, or \$175 per m length of roadway.
- 26 ROW cost for each alternative varies, see attached documentation.
- 27 Wetlands Mitigation Costs vary see attached documentation.
- 28 Signing costs estimated at 1% of the material items.
- 29 1% added for the design costs associated with utility relocations.
- 30 A miscellaneous cost equal to 15% of materials is used because of the size and complexity of this highway project.
- 31 Mobilization cost of 3% is used based on averages of similar projects, see attached documentation.
- 32 A 25% contingency is used based on the size and complexity of the project.
- 33 15% of materials cost is for engineering design and construction oversight.
- 34 To be consistent with the Legacy Parkway project budget, preaward engineering, incentives, and stipends were added to all the alternatives to establish the project budget. These amounts are the same for each alternative.

| Antelope Island Regional Alternative Cost Estimate 95 m (312 ft) |           |      |              |                     |
|--|-----------|------|--------------|---------------------|
| ITEM   | QUANTITY  | UNIT | COST         |                     |
|  |           |      | UNIT         | TOTAL<br>(MILLIONS) |
| Length on Land   | 30000     | m    |              |                     |
| Length over Water  | 17000     | m    |              |                     |
| Pavement (a)   | 732,000   | m2   | \$47         | \$34.40             |
| Trail Pavement (b)   | 112,800   | m2   | \$14         | \$1.58              |
| Trail Mulch (b)  | 60,000    | m2   | \$0.40       | \$0.02              |
| Earthwork (c)  | 6,084,168 | m3   | \$10         | \$59.81             |
| Geotextile Material  | 1,620,000 | m2   | \$2          | \$3.24              |
| 24" RCP  | 19,800    | m    | \$110        | \$2.18              |
| 36" RCP  | 3,960     | m    | \$160        | \$0.63              |
| Catch Basins   | 940       | Each | \$1,800      | \$1.69              |
| Structures (d) (g)   | 633,500   | m2   | \$1,200      | \$760.20            |
| Box Culverts (e)   | 400       | m    | \$4,000      | \$1.60              |
| Striping   | 211,500   | m    | \$1.00       | \$0.21              |
| Fence  | 94,500    | m    | \$29         | \$2.74              |
| Traffic Control  | 1         | Lump | \$2,053,851  | \$2.05              |
| Landscaping  | 1         | Lump | \$6,500,000  | \$6.50              |
| Lighting   | 1         | Lump | \$3,000,000  | \$3.00              |
| Major Utility Relocations (f)                                    | 1         | Lump | \$7,000,000  | \$7.00              |
| ATMS   | 47,000    | m    | \$175        | \$8.23              |
| <b>SUBTOTAL</b>  |           |      |              | <b>\$895.09</b>     |
| ROW  | 1         | Lump | \$17,826,836 | \$17.83             |
| Wetlands Mitigation  | 1         | Lump | \$70,000,000 | \$70.00             |
| Hazardous Waste Clean-up (Refineries)                            | 0         | Lump | \$0          | \$0.00              |
| Hazardous Waste Clean-up (North Temple Landfill)                 | 1         | Lump | \$5,000,000  | \$5.00              |
| Petroleum Processing Plant                                       | 0         | Each | \$0          | \$0.00              |
| Signing (1%)   |           |      |              | \$8.95              |
| Utilities (1%)   |           |      |              | \$8.95              |
| Misc. Items (15%)  |           |      |              | \$134.26            |
| Mobilization (3%)  |           |      |              | \$26.85             |
| Contingencies (25%)  |           |      |              | \$223.77            |
| Engineering (15%)  |           |      |              | \$134.26            |
| <b>TOTAL</b>   |           |      |              | <b>\$1,524.97</b>   |
| Preaward Engineering   |           |      |              | \$22.50             |
| Incentives   |           |      |              | \$10.00             |
| Stipends   |           |      |              | \$1.00              |
| <b>Project Budget</b>  |           |      |              | <b>\$1,558.47</b>   |

**Notes:**

- (a) Quantity equals length on land times width (24.4m).
- (b) Quantity equals length times width which is 2.4 m for pedestrian, 2.0 m for equestrian.
- (c) Earthwork quantity equals (length on land x earthwork prism) + (system interchanges) + (5% contingency)
- (d) Due to westerly location assume no diamond interchanges.
- (e) Stream crossings: Kays, Goggin, North Point Consolidated Canal, Unnamed near 5600 West,
- (f) Major utilities are: Petroleum lines, sanitary sewer, and water line relocations. Due to the westerly location there are less impacts.
- (g) Assumed Cross Streets: None

| Trans Bay Regional Alternative Cost Estimate 95 m (312 ft) |           |      |              |                             |
|--|-----------|------|--------------|-----------------------------|
| ITEM   | QUANTITY  | UNIT | UNIT         | COST<br>TOTAL<br>(MILLIONS) |
| Length on Land   | 7480      | m    |              |                             |
| Length over Water  | 24000     | m    |              |                             |
| Pavement (a)   | 182,512   | m2   | \$47         | \$8.58                      |
| Trail Pavement (b)   | 75,552    | m2   | \$14         | \$1.06                      |
| Trail Mulch (b)  | 14,960    | m2   | \$0.40       | \$0.01                      |
| Earthwork (c)  | 2,655,498 | m3   | \$10         | \$26.10                     |
| Geotextile Material  | 403,920   | m2   | \$2          | \$0.81                      |
| 24" RCP  | 4,937     | m    | \$110        | \$0.54                      |
| 36" RCP  | 987       | m    | \$160        | \$0.16                      |
| Catch Basins   | 630       | Each | \$1,800      | \$1.13                      |
| Structures (d) (g)   | 864,500   | m2   | \$1,200      | \$1,037.40                  |
| Box Culverts (e)   | 500       | m    | \$4,000      | \$2.00                      |
| Striping   | 141,660   | m    | \$1.00       | \$0.14                      |
| Fence  | 23,562    | m    | \$29         | \$0.68                      |
| Traffic Control  | 1         | Lump | \$5,000,000  | \$5.00                      |
| Landscaping  | 1         | Lump | \$2,500,000  | \$2.50                      |
| Lighting   | 1         | Lump | \$3,000,000  | \$3.00                      |
| Major Utility Relocations (f)                              | 1         | Lump | \$7,000,000  | \$7.00                      |
| ATMS   | 31,480    | m    | \$175        | \$5.51                      |
| <b>SUBTOTAL</b>  |           |      |              | <b>\$1,101.62</b>           |
| ROW  | 1         | Lump | \$17,031,545 | \$17.03                     |
| Wetlands Mitigation  | 1         | Lump | \$83,300,000 | \$83.30                     |
| Hazardous Waste Clean-up (Refineries)                      | 0         | Lump | \$0          | \$0.00                      |
| Hazardous Waste Clean-up (North Temple Landfill)           | 1         | Lump | \$5,000,000  | \$5.00                      |
| Petroleum Processing Plant                                 | 0         | Each | \$0          | \$0.00                      |
| Signing (1%)   |           |      |              | \$11.02                     |
| Utilities (1%)   |           |      |              | \$11.02                     |
| Misc. Items (15%)  |           |      |              | \$165.24                    |
| Mobilization (3%)  |           |      |              | \$33.05                     |
| Contingencies (25%)  |           |      |              | \$275.41                    |
| Engineering (15%)  |           |      |              | \$165.24                    |
| <b>TOTAL</b>   |           |      |              | <b>\$1,867.93</b>           |
| Preaward Engineering                                       |           |      |              | \$22.50                     |
| Incentives   |           |      |              | \$10.00                     |
| Stipends   |           |      |              | \$1.00                      |
| <b>Project Budget</b>                                      |           |      |              | <b>\$1,901.43</b>           |

**Notes:**

- (a) Quantity equals length on land times width (24.4m).
- (b) Quantity equals length times width which is 2.4 m for pedestrian, 2.0 m for equestrian.
- (c) Earthwork quantity equals (length on land x earthwork prism) + (system interchanges) + (5% contingency)
- (d) Due to westerly location assume no diamond interchanges.
- (e) Stream crossings: Holms, Salt Lake Sewage Canal, Goggin, North Point Consolidated Canal, Unnamed near 5600 West
- (f) Major utilities are: Petroleum lines, sanitary sewer, and water line relocations. Due to the westerly location there are less impacts.
- (g) Assumed Cross Streets: None

| Denver & Rio Grande Regional Alternative Cost Estimate 95 m (312 ft) |           |      |               |                     |
|--|-----------|------|---------------|---------------------|
| ITEM   | QUANTITY  | UNIT | COST<br>UNIT  | TOTAL<br>(MILLIONS) |
| Length on Land   | 21,500    | m    |               |                     |
| Length on Structure (g)  | 1,000     | m    |               |                     |
| Pavement (a)   | 549,000   | m2   | \$47          | \$25.80             |
| Trail Pavement (b)   | 54,000    | m2   | \$14          | \$0.76              |
| Trail Mulch (b)  | 45,000    | m2   | \$0.40        | \$0.02              |
| Earthwork (c)  | 5,100,394 | m3   | \$10          | \$50.14             |
| Geotextile Material  | 1,215,000 | m2   | \$2           | \$2.43              |
| 24" RCP  | 14,850    | m    | \$110         | \$1.63              |
| 36" RCP  | 2,970     | m    | \$160         | \$0.48              |
| Catch Basins   | 450       | Each | \$1,800       | \$0.81              |
| Structures (f)   | 130,910   | m2   | \$1,200       | \$157.09            |
| Box Culverts (d)   | 1,300     | m    | \$4,000       | \$5.20              |
| Striping   | 101,250   | m    | \$1.00        | \$0.10              |
| Fence  | 70,875    | m    | \$29          | \$2.06              |
| Traffic Control  | 1         | Lump | \$6,000,000   | \$6.00              |
| Landscaping  | 1         | Lump | \$10,000,000  | \$10.00             |
| Lighting   | 1         | Lump | \$3,000,000   | \$3.00              |
| Major Utility Relocations (e)  | 1         | Lump | \$18,000,000  | \$18.00             |
| ATMS   | 22,500    | m    | \$175         | \$3.94              |
| <b>SUBTOTAL</b>  |           |      |               | <b>\$287.45</b>     |
| ROW  | 1         | Lump | \$79,045,000  | \$79.05             |
| Wetlands Mitigation  | 1         | Lump | \$18,600,000  | \$18.60             |
| Hazardous Waste Clean-up (Refineries)                                | 2         | Lump | \$31,530,000  | \$31.53             |
| Hazardous Waste Clean-up (Landfills)                                 | 0         | Lump | \$0           | \$0.00              |
| Petroleum Processing Plant   | 0         | Each | \$500,000,000 | \$0.00              |
| Signing (1%)   |           |      |               | \$2.87              |
| Utilities (1%)   |           |      |               | \$2.87              |
| Misc. Items (15%)  |           |      |               | \$43.12             |
| Mobilization (3%)  |           |      |               | \$8.62              |
| Contingencies (25%)  |           |      |               | \$71.86             |
| Engineering (15%)  |           |      |               | \$43.12             |
| <b>TOTAL</b>   |           |      |               | <b>\$589.09</b>     |
| Preaward Engineering   |           |      |               | \$22.50             |
| Incentives   |           |      |               | \$10.00             |
| Stipends   |           |      |               | \$1.00              |
| <b>Project Budget</b>  |           |      |               | <b>\$622.59</b>     |

**Notes:**

- (a) Quantity equals length on land times width (24.4m).
- (b) Quantity equals length times width which is 2.4 m for pedestrian, 2.0 m for equestrian.
- (c) Earthwork quantity equals (length on land x earthwork prism) + (diamond interchanges) + (system interchanges) + (5% contingency)
- (d) Stream crossings: North Canyon, Oil Drain, Drainage Canal, Mill Creek, Barton Creek, Deuel/Stone Creek, Parrish Creek, Barnard Creek, Ricks Creek, Davis Creek, Steed Creek, Farmington Creek, Shepard Creek
- (e) Major utilities are: Petroleum lines, sanitary sewer, and water line relocations.
- (f) Assumed Cross Streets: Center Street, 400 West, 1100 West, Redwood Road, 2600 South, 1500 South, 400 North, Pages Lane, Porter Lane, 1250 West, Glover's Lane, State Street
- (g) Length of structure in addition to street crossings to account for railroad tracks.

| Union Pacific Regional Alternative Cost Estimate 95 m (312 ft) |           |      |               |                     |
|--|-----------|------|---------------|---------------------|
| ITEM   | QUANTITY  | UNIT | COST          |                     |
|  |           |      | UNIT          | TOTAL<br>(MILLIONS) |
| Length on Land   | 23005     | m    |               |                     |
| Length on Structure  | 2556      | m    |               |                     |
| Pavement (a)   | 561,322   | m2   | \$47          | \$26.38             |
| Trail Pavement (b)   | 61,346    | m2   | \$14          | \$0.86              |
| Trail Mulch (b)  | 51,122    | m2   | \$0.40        | \$0.02              |
| Earthwork (c)  | 5,177,280 | m3   | \$10          | \$50.89             |
| Geotextile Material  | 1,242,270 | m2   | \$2           | \$2.48              |
| 24" RCP  | 15,183    | m    | \$110         | \$1.67              |
| 36" RCP  | 3,037     | m    | \$160         | \$0.49              |
| Catch Basins   | 511       | Each | \$1,800       | \$0.92              |
| Structures (f)   | 178,628   | m2   | \$1,200       | \$214.35            |
| Box Culverts (d)   | 1,300     | m    | \$4,000       | \$5.20              |
| Striping   | 115,025   | m    | \$1.00        | \$0.12              |
| Fence  | 72,466    | m    | \$29          | \$2.10              |
| Traffic Control  | 1         | Lump | \$6,000,000   | \$6.00              |
| Landscaping  | 1         | Lump | \$10,000,000  | \$10.00             |
| Lighting   | 1         | Lump | \$3,000,000   | \$3.00              |
| Major Utility Relocations (e)                                  | 1         | Lump | \$18,000,000  | \$18.00             |
| ATMS   | 25,561    | m    | \$175         | \$4.47              |
| <b>SUBTOTAL</b>  |           |      |               | <b>\$346.96</b>     |
| ROW  | 1         | Lump | \$102,125,455 | \$102.13            |
| Wetlands Mitigation  | 1         | Lump | \$13,100,000  | \$13.10             |
| Hazardous Waste Clean-up (Refineries)                          | 2         | Lump | \$31,530,000  | \$31.53             |
| Hazardous Waste Clean-up (Landfills)                           | 0         | Lump | \$0           | \$0.00              |
| Petroleum Processing Plant (g)                                 | 2         | Each | \$500,000,000 | \$1,000.00          |
| Signing (1%)   |           |      |               | \$3.47              |
| Utilities (1%)   |           |      |               | \$3.47              |
| Misc. Items (15%)  |           |      |               | \$52.04             |
| Mobilization (3%)  |           |      |               | \$10.41             |
| Contingencies (25%)  |           |      |               | \$86.74             |
| Engineering (15%)  |           |      |               | \$52.04             |
| <b>TOTAL</b>   |           |      |               | <b>\$1,701.89</b>   |
| Preaward Engineering   |           |      |               | \$22.50             |
| Incentives   |           |      |               | \$10.00             |
| Stipends   |           |      |               | \$1.00              |
| <b>Project Budget</b>  |           |      |               | <b>\$1,735.39</b>   |

**Notes:**

- (a) Quantity equals length on land times width (24.4m).
- (b) Quantity equals length times width which is 2.4 m for pedestrian, 2.0 m for equestrian.
- (c) Earthwork quantity equals (length on land x earthwork prism) + (diamond interchanges) + (system interchanges) + (5% contingency)
- (d) Stream crossings: North Canyon, Oil Drain, Drainage Canal, Mill Creek, Barton Creek, Deuel/Stone Creek, Parrish Creek, Barnard Creek, Ricks Creek, Davis Creek, Steed Creek, Farmington Creek, Shepard Creek
- (e) Major utilities are: Petroleum lines, sanitary sewer, and water line relocations.
- (f) Assumed Cross Streets: Center Street, 400 West, 2600 South, 1500 South, 400 North, Pages Lane, Porter Lane, 1250 West, Glover's Lane, State Street
- (g) Cost for Petroleum Processing plants \$500,000,000 each as per Right of Way expertise.



| Farmington Bay Regional Alternative Cost Estimate 95 m (312 ft) |           |      |              |                     |
|---|-----------|------|--------------|---------------------|
| ITEM  | QUANTITY  | UNIT | COST         |                     |
|   |           |      | UNIT         | TOTAL<br>(MILLIONS) |
| Length on Land  | 17130     | m    |              |                     |
| Length on Structure   | 6945      | m    |              |                     |
| Pavement (a)  | 417,972   | m2   | \$47         | \$19.64             |
| Trail Pavement (b)  | 57,780    | m2   | \$14         | \$0.81              |
| Trail Mulch (b)   | 48,150    | m2   | \$0.40       | \$0.02              |
| Earthwork (c)   | 3,745,544 | m3   | \$10         | \$36.82             |
| Geotextile Material   | 925,020   | m2   | \$2          | \$1.85              |
| 24" RCP   | 13,332    | m    | \$110        | \$1.47              |
| 36" RCP   | 2,666     | m    | \$160        | \$0.43              |
| Catch Basins  | 404       | Each | \$1,800      | \$0.73              |
| Structures (d) (g)  | 313,470   | m2   | \$1,200      | \$376.16            |
| Box Culverts (e)  | 700       | m    | \$4,000      | \$2.80              |
| Striping  | 108,338   | m    | \$1.00       | \$0.11              |
| Fence   | 53,960    | m    | \$29         | \$1.56              |
| Traffic Control   | 1         | Lump | \$5,000,000  | \$5.00              |
| Landscaping   | 1         | Lump | \$10,000,000 | \$10.00             |
| Lighting  | 1         | Lump | \$3,000,000  | \$3.00              |
| Major Utility Relocation (f)                                    | 1         | Lump | \$7,000,000  | \$7.00              |
| ATMS  | 24,075    | m    | \$175        | \$4.21              |
| <b>SUBTOTAL</b>   |           |      |              | <b>\$471.61</b>     |
| ROW   | 1         | Lump | \$20,300,000 | \$20.30             |
| Wetlands Mitigation   | 1         | Lump | \$55,500,000 | \$55.50             |
| Hazardous Waste Clean-up (Refineries)                           | 0         | Lump | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills)                            | 0         | Lump | \$0          | \$0.00              |
| Petroleum Processing Plant                                      | 0         | Each | \$0          | \$0.00              |
| Signing (1%)  |           |      |              | \$4.72              |
| Utilities (1%)  |           |      |              | \$4.72              |
| Misc. Items (15%)   |           |      |              | \$70.74             |
| Mobilization (3%)   |           |      |              | \$14.15             |
| Contingencies (25%)   |           |      |              | \$117.90            |
| Engineering (15%)   |           |      |              | \$70.74             |
| <b>TOTAL</b>  |           |      |              | <b>\$830.38</b>     |
| Preaward Engineering  |           |      |              | \$22.50             |
| Incentives  |           |      |              | \$10.00             |
| Stipends  |           |      |              | \$1.00              |
| <b>Project Budget</b>   |           |      |              | <b>\$863.88</b>     |

**Notes:**

- (a) Quantity equals length on land times width (24.4m).
- (b) Quantity equals length times width which is 2.4 m for pedestrian, 2.0 m for equestrian.
- (c) Earthwork quantity equals (length on land x earthwork prism) + (system interchange)  
+ (5% contingency)
- (d) This alternative will have a system to system interchange at the southern end, and a smaller interchange at the northern end.
- (e) Stream crossings: North Canyon, Drainage Canal, Mill Creek, Deuel/Stone Creek, City Drain, Weber Basin Drain, Farmington Creek
- (f) Major utilities are: Petroleum lines, sanitary sewer, and water line relocations.
- (g) Assumed Cross Streets: Center Street, Duck Club Road, Farmington Bay Access Road, Burke Lane, Shepard Lane

| Great Salt Lake Regional Alternative Cost Estimate 95 m (312 ft) |           |      |              |                     |
|--|-----------|------|--------------|---------------------|
| ITEM   | QUANTITY  | UNIT | COST         |                     |
|  |           |      | UNIT         | TOTAL<br>(MILLIONS) |
| Length on Land   | 22500     | m    |              |                     |
| Length over Water  | 0         | m    |              |                     |
| Pavement (a)   | 549,000   | m2   | \$47         | \$25.81             |
| Trail Pavement (b)   | 54,000    | m2   | \$14         | \$0.76              |
| Trail Mulch (b)  | 45,000    | m2   | \$0.40       | \$0.02              |
| Earthwork (c)  | 5,100,394 | m3   | \$10         | \$50.14             |
| Geotextile Material  | 1,215,000 | m2   | \$2          | \$2.43              |
| 24" RCP  | 14,850    | m    | \$110        | \$1.64              |
| 36" RCP  | 2,970     | m    | \$160        | \$0.48              |
| Catch Basins   | 450       | Each | \$1,800      | \$0.81              |
| Structures (f)   | 83,390    | m2   | \$1,200      | \$100.07            |
| Box Culverts (d)   | 1,300     | m    | \$4,000      | \$5.20              |
| Striping   | 101,250   | m    | \$1.00       | \$0.11              |
| Fence  | 70,875    | m    | \$29         | \$2.06              |
| Traffic Control  | 1         | Lump | \$5,000,000  | \$5.00              |
| Landscaping  | 1         | Lump | \$10,000,000 | \$10.00             |
| Lighting   | 1         | Lump | \$3,000,000  | \$3.00              |
| Major Utility Relocations (e)                                    | 1         | Lump | \$13,500,000 | \$13.50             |
| ATMS   | 22,500    | m    | \$175        | \$3.94              |
| <b>SUBTOTAL</b>  |           |      |              | <b>\$224.96</b>     |
| ROW  | 1         | Lump | \$53,853,636 | \$53.85             |
| Wetlands Mitigation  | 1         | Lump | \$25,000,000 | \$25.00             |
| Hazardous Waste Clean-up (Refineries)                            | 0         | Lump | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills)                             | 0         | Lump | \$0          | \$0.00              |
| Petroleum Processing Plant                                       | 0         | Each | \$0          | \$0.00              |
| Signing (1%)   |           |      |              | \$2.25              |
| Utilities (1%)   |           |      |              | \$2.25              |
| Misc. Items (15%)  |           |      |              | \$33.74             |
| Mobilization (3%)  |           |      |              | \$6.75              |
| Contingencies (25%)  |           |      |              | \$56.24             |
| Engineering (15%)  |           |      |              | \$33.74             |
| <b>TOTAL</b>   |           |      |              | <b>\$438.79</b>     |
| Preaward Engineering   |           |      |              | \$22.50             |
| Incentives   |           |      |              | \$10.00             |
| Stipends   |           |      |              | \$1.00              |
| <b>Project Budget</b>  |           |      |              | <b>\$472.29</b>     |

**Notes:**

- (a) Quantity equals length on land times width (24.4m).
- (b) Quantity equals length times width which is 2.4 m for pedestrian, 2.0 m for equestrian.
- (c) Earthwork quantity equals (length on land x earthwork prism) + (system interchanges) + (diamond interchanges)+ (5% contingency)
- (d) Stream crossings: Northwest Oil Drain, Drainage Canal, North Canyon, Mill, Barton, Duel/Stone, Parrish, Barnard, Ricks, Davis, Steed, Farmington, and Shepard creeks
- (e) Major utilities are: Petroleum lines, sanitary sewer, and water line relocations.
- (f) Assumed Cross Streets: Center Street, 1250 West, Glover's Lane, State Street

APPENDIX A  
(CONTINUED)

GENERAL NOTES BACKUP INFORMATION

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## Utah Department of Transportation

CSI - METRIC

## Statewide Standard Item Average Prices and Total Quantities

General Note 2  
Concrete Pavement  
Lost

| Item Number | Description  | UOM  | Avg Unit Price | Total Qty | Last Year Avg |
|-------------|--|------|----------------|-----------|---------------|
| 027050010   | Asphalt Pavement Sawing                                  | mm-m | \$0.02         | 6,094,442 | 2001          |
| 027050015   | Asphalt Pavement Sawing                                  | m    | \$1.31         | 2,575     | 2001          |
| 027050020   | Concrete Pavement Sawing                                 | mm-m | \$0.17         | 28,391    | 2001          |
| 027050025   | Concrete Pavement Sawing                                 | m    | \$0.00         |           |               |
| 027050030   | Concrete Sawing  | mm-m | \$0.07         | 58,496    | 2001          |
| 027050035   | Concrete Sawing  | m    | \$16.10        | 20        | 2001          |
| 027120010   | Lean Concrete Base Course, 100 mm thick                  | m2   | \$16.00        | 1,100     | 2001          |
| 027150010   | Hydrated Lime Treated Roadbed                            | m2   | \$0.00         |           |               |
| 027210010   | Untreated Base Course 37.5 mm Max                        | Mg   | \$0.00         |           |               |
| 027210020   | Untreated Base Course 37.5 mm Max                        | m3   | \$0.00         |           |               |
| 027210030   | Untreated Base Course 25 mm Max                          | Mg   | \$0.00         |           |               |
| 027210040   | Untreated Base Course 25 mm Max                          | m3   | \$0.00         |           |               |
| 027210050   | Untreated Base Course 19 mm Max                          | Mg   | \$8.00         | 42,000    | 2001          |
| 027210060   | Untreated Base Course 19 mm Max                          | m3   | \$35.95        | 515       | 2001          |
| 027210070   | Untreated Base Course 19 mm or 25 mm Max                 | Mg   | \$8.61         | 287,381   | 2001          |
| 027210080   | Untreated Base Course 19 mm or 25 mm Max                 | m3   | \$21.16        | 48,304    | 2001          |
| 027410005   | HMA - 9.5 mm   | Mg   | \$30.61        | 7,405     | 2001          |
| 027410010   | HMA - 12.5 mm  | Mg   | \$42.84        | 38,811    | 2001          |
| 027410020   | HMA - 19.0 mm  | Mg   | \$35.29        | 662,915   | 2001          |
| 027410030   | HMA - 25.0 mm  | Mg   | \$0.00         |           |               |
| 027430010   | HMA Mix - Small Projects 12.5 mm                         | Mg   | \$73.83        | 1,747     | 2001          |
| 027430020   | HMA Mix - Bike/Ped Path 9.5 mm                           | Mg   | \$36.34        | 5,149     | 2001          |
| 027430030   | Rejuvenator Type "B" Modified                            | Mg   | \$0.00         |           |               |
| 027440010   | HMA Mix - Procurement Laydown 9.5 mm                     | Mg   | \$0.00         |           |               |
| 027440020   | HMA Mix - Procurement Laydown 12.5 mm                    | Mg   | \$0.00         |           |               |
| 027440030   | HMA Mix - Procurement Blade Work 9.5 mm                  | Mg   | \$0.00         |           |               |
| 027440040   | HMA Mix - Procurement Blade Work 12.5 mm                 | Mg   | \$0.00         |           |               |
| 027470010   | Road Mix Asphalt Surface Course                          | Mg   | \$0.00         |           |               |
| 027480010   | Liquid Asphalt MC-70 or MC-250                           | Mg   | \$303.83       | 851       | 2001          |
| 027480030   | Emulsified Asphalt SS-1                                  | Mg   | \$230.50       | 1,199     | 2001          |
| 027480040   | Emulsified Asphalt CSS-1                                 | Mg   | \$155.68       | 1,420     | 2001          |
| 027480050   | Emulsified Asphalt SS-1H                                 | Mg   | \$110.70       | 515       | 2001          |
| 027480060   | Emulsified Asphalt CSS-1H                                | Mg   | \$150.60       | 722       | 2001          |
| 027480070   | Emulsified Asphalt CRS-2A                                | Mg   | \$560.00       | 10        | 2001          |
| 027490010   | Asphalt Concrete Driveway                                | Each | \$617.39       | 46        | 2001          |
| 027520010   | Portland Cement Concrete Pavement 175 mm Thick 7"        | m2   | \$51.00        | 65        | 2001          |
| 027520020   | Portland Cement Concrete Pavement 225 mm Thick 9"        | m2   | \$30.13        | 17,848    | 2001          |
| 027520030   | Portland Cement Concrete Pavement 275 mm Thick           | m2   | \$0.00         |           |               |
| 027530010   | Full Depth Slab Replacement                              | m2   | \$245.00       | 20        | 2001          |
| 027550010   | Concrete Slab Jacking                                    | m3   | \$0.00         |           |               |
| 027610020   | Longitudinal Rumble Strip                                | m    | \$0.00         |           |               |
| 027620010   | Plowable Pavement Marker - One Way White                 | Each | \$0.00         |           |               |
| 027620020   | Plowable Pavement Marker - One Way Yellow                | Each | \$0.00         |           |               |
| 027620030   | Plowable Pavement Marker - Two Way Yellow                | Each | \$0.00         |           |               |
| 027620040   | Plowable Pavement Marker                                 | Each | \$0.00         |           |               |
| 027650005   | Traffic Striping Paint                                   | L    | \$3.18         | 93,527    | 2001          |
| 027650010   | Traffic Striping Paint                                   | m    | \$0.61         | 42,029    | 2001          |
| 027650020   | Pavement Message Paint                                   | Each | \$14.00        | 3,267     | 2001          |
| 027650025   | Pavement Marking Paint (Stop Bars, Cross Walks - 300 mm) | m    | \$4.31         | 1,710     | 2001          |
| 027650030   | Remove Pavement Markings                                 | m    | \$1.83         | 22,833    | 2001          |
| 027650040   | Remove Pavement Markings                                 | Each | \$44.69        | 173       | 2001          |
| 027680005   | 100 mm Pavement Marking Tape - White                     | m    | \$5.73         | 107,182   | 2001          |
| 027680010   | 200 mm Pavement Marking Tape - White                     | m    | \$11.61        | 31,580    | 2001          |
| 027680015   | 100 mm Pavement Marking Tape - Yellow                    | m    | \$5.95         | 96,934    | 2001          |
| 027680020   | 200 mm Pavement Marking Tape - Yellow                    | m    | \$9.90         | 118       | 2001          |
| 027680025   | Pavement Message (Tape)                                  | Each | \$91.33        | 4,058     | 2001          |
| 027680030   | 100 mm Pavement Marking Epoxy - White Type 1             | m    | \$2.69         | 24,130    | 2001          |
| 027680035   | 200 mm Pavement Marking Epoxy - White Type 1             | m    | \$0.00         |           |               |
| 027680040   | 100 mm Pavement Marking Epoxy - Yellow Type 1            | m    | \$2.72         | 17,958    | 2001          |

## Utah Department of Transportation

CSI - METRIC

## Statewide Standard Item Average Prices and Total Quantities

General Note 2  
Concrete Pavement  
Cost

| Item Number | Description  | UOM  | Avg Unit Price | Total Qty | Last Year Avgd |
|-------------|--|------|----------------|-----------|----------------|
| 026350025   | Manhole Frame and Grated Cover, Std Dwg 1701                     | Each | \$ .00         |           |                |
| 026350030   | Manhole Frame and Solid Cover, Std Dwg 1702                      | Each | \$194.00       | 10        | 2002           |
| 026350035   | Rectangular Grate and Frame (Standard Grating), Std Dwg 1703     | Each | \$225.00       | 74        | 2002           |
| 026350040   | Rectangular Grate And Frame (Bicycle Safe Grating), Std Dwg 1703 | Each | \$394.63       | 116       | 2002           |
| 026350045   | Solid Cover and Frame, Std Dwg 1705                              | Each | \$352.30       | 13        | 2002           |
| 026350050   | Manhole Steps, Std Dwg 1706                                      | Each | \$10.00        | 24        | 2002           |
| 026430010   | Concrete-Lined Ditch   | m3   | \$400.00       | 1         | 2001           |
| 026450010   | Precast Concrete Box Culvert                                     | Lump | \$ .00         |           |                |
| 027050010   | Asphalt Pavement Sawing  | mm-m | \$ .02         | 2,854,743 | 2002           |
| 027050015   | Asphalt Pavement Sawing  | m    | \$5.21         | 1,056     | 2002           |
| 027050020   | Concrete Pavement Sawing   | mm-m | \$ .09         | 36,330    | 2002           |
| 027050025   | Concrete Pavement Sawing   | m    | \$ .00         |           |                |
| 027050030   | Concrete Sawing  | mm-m | \$ .18         | 146,837   | 2002           |
| 027050035   | Concrete Sawing  | m    | \$5.29         | 725       | 2002           |
| 027120010   | Lean Concrete Base Course, 100 mm thick                          | m2   | \$16.00        | 1,100     | 2001           |
| 027150010   | Hydrated Lime Treated Roadbed                                    | m2   | \$ .00         |           |                |
| 027210010   | Untreated Base Course 37.5 mm Max                                | Mg   | \$ .00         |           |                |
| 027210020   | Untreated Base Course 37.5 mm Max                                | m3   | \$ .00         |           |                |
| 027210030   | Untreated Base Course 25 mm Max                                  | Mg   | \$ .00         |           |                |
| 027210040   | Untreated Base Course 25 mm Max                                  | m3   | \$ .00         |           |                |
| 027210050   | Untreated Base Course 19 mm Max                                  | Mg   | \$8.00         | 42,000    | 2001           |
| 027210060   | Untreated Base Course 19 mm Max                                  | m3   | \$32.20        | 764       | 2002           |
| 027210070   | Untreated Base Course 19 mm or 25 mm Max                         | Mg   | \$10.17        | 86,853    | 2002           |
| 027210080   | Untreated Base Course 19 mm or 25 mm Max                         | m3   | \$19.80        | 49,966    | 2002           |
| 027410005   | HMA - 9.5 mm   | Mg   | \$25.00        | 5,800     | 2002           |
| 027410010   | HMA - 12.5 mm  | Mg   | \$43.70        | 11,886    | 2002           |
| 027410020   | HMA - 19.0 mm  | Mg   | \$36.08        | 357,175   | 2002           |
| 027410030   | HMA - 25.0 mm  | Mg   | \$ .00         |           |                |
| 027430010   | HMA Mix - Small Projects 12.5 mm                                 | Mg   | \$50.29        | 2,245     | 2002           |
| 027430020   | HMA Mix - Bike/Ped Path 9.5 mm                                   | Mg   | \$50.12        | 1,234     | 2002           |
| 027430030   | Rejuvenator Type "B" Modified                                    | Mg   | \$ .00         |           |                |
| 027440010   | HMA Mix - Procurement Laydown 9.5 mm                             | Mg   | \$ .00         |           |                |
| 027440020   | HMA Mix - Procurement Laydown 12.5 mm                            | Mg   | \$ .00         |           |                |
| 027440030   | HMA Mix - Procurement Blade Work 9.5 mm                          | Mg   | \$ .00         |           |                |
| 027440040   | HMA Mix - Procurement Blade Work 12.5 mm                         | Mg   | \$ .00         |           |                |
| 027470010   | Road Mix Asphalt Surface Course                                  | Mg   | \$ .00         |           |                |
| 027480010   | Liquid Asphalt MC-70 or MC-250                                   | Mg   | \$ .00         |           |                |
| 027480030   | Emulsified Asphalt SS-1  | Mg   | \$349.27       | 445       | 2002           |
| 027480040   | Emulsified Asphalt CSS-1   | Mg   | \$225.10       | 1,116     | 2002           |
| 027480050   | Emulsified Asphalt SS-1H   | Mg   | \$175.46       | 448       | 2002           |
| 027480060   | Emulsified Asphalt CSS-1H  | Mg   | \$228.52       | 406       | 2002           |
| 027480070   | Emulsified Asphalt CRS-2A  | Mg   | \$150.60       | 722       | 2001           |
| 027490010   | Asphalt Concrete Driveway  | Mg   | \$282.50       | 10        | 2002           |
| 027520010   | Portland Cement Concrete Pavement 175 mm Thick                   | Each | \$682.74       | 61        | 2002           |
| 027520020   | Portland Cement Concrete Pavement 225 mm Thick                   | m2   | \$51.00        | 65        | 2001           |
| 027520030   | Portland Cement Concrete Pavement 275 mm Thick                   | m2   | \$30.13        | 17,848    | 2001           |
| 027530010   | Full Depth Slab Replacement                                      | m2   | \$37.00        | 63,150    | 2002           |
| 027550010   | Concrete Slab Jacking  | m2   | \$245.00       | 20        | 2001           |
| 027610020   | Longitudinal Rumble Strip  | m3   | \$700.00       | 225       | 2002           |
| 027620010   | Plowable Pavement Marker - One Way White                         | m    | \$ .57         | 201,500   | 2002           |
| 027620020   | Plowable Pavement Marker - One Way Yellow                        | Each | \$110.00       | 38        | 2002           |
| 027620030   | Plowable Pavement Marker - Two Way Yellow                        | Each | \$ .00         |           |                |
| 027620040   | Plowable Pavement Marker   | Each | \$ .00         |           |                |
| 027650005   | Traffic Striping Paint   | Each | \$30.00        | 520       | 2002           |
| 027650010   | Traffic Striping Paint   | L    | \$2.90         | 55,590    | 2002           |
| 027650020   | Pavement Message Paint   | m    | \$ .13         | 17,657    | 2002           |
| 027650025   | Pavement Marking Paint (Stop Bars, Cross Walks - 300 mm)         | Each | \$13.75        | 1,830     | 2002           |
| 027650030   | Remove Pavement Markings   | m    | \$1.11         | 538       | 2002           |
| 027650040   | Remove Pavement Markings   | m    | \$1.32         | 5,199     | 2002           |
|             |  | Each | \$66.67        | 3         | 2002           |

# General Note 2 Concrete Pavement Cost

| itm_num   | uom | desc   | year | quantity | price |                      |
|-----------|-----|--|------|----------|-------|----------------------|
| 027520020 | m2  | Portland Cement Concrete Pavement 225 mm Thick | 2001 | 17848    | 30.13 | 9"                   |
|           |     |  |      |          |       | 12"                  |
|           |     |  |      |          |       | \$40.17 SM           |
|           |     |  |      |          |       | \$47.81 SY           |
| 027520010 | m2  | Portland Cement Concrete Pavement 175 mm Thick | 2001 | 65       | 51    | per inch 12 inch     |
| 027520020 | m2  | Portland Cement Concrete Pavement 225 mm Thick | 2001 | 17848    | 30.13 | 9 3.347778 40.17333  |
| 027520030 | m2  | Portland Cement Concrete Pavement 275 mm Thick | 2002 | 63150    | 37    | 11 3.363636 40.36364 |
|           |     |  |      |          |       | average              |
|           |     |  |      |          |       | \$40.27 SM           |
|           |     |  |      |          |       | \$48.16 SY           |

# Utah Department of Transportation

CSI - INCH/POUND

## Statewide Standard Item Average Prices and Total Quantities

General Note 3.  
Muleh Cost

| Item Number | Description  | UOM      | Avg Unit Price | Total Qty | Last Year Avgd |
|-------------|--|----------|----------------|-----------|----------------|
| 028920110   | Video Processing Module                                    | Each     | \$ .00         |           |                |
| 028920112   | State Force Account Labor for Eight Phase Controller       | Each     | \$ .00         |           |                |
| 028920114   | Fiber Optic Data Modem                                     | Each     | \$ .00         |           |                |
| 028920116   | Video Detection Modem                                      | Each     | \$ .00         |           |                |
| 028920118   | 70 Ft. Mast Arm  | Each     | \$ .00         |           |                |
| 028920120   | 75 Ft. Mast Arm  | Each     | \$ .00         |           |                |
| 028920122   | 10 Ft. Ped. Pole   | Each     | \$ .00         |           |                |
| 028920124   | 42 Ft. Freeway Light Pole                                  | Each     | \$ .00         |           |                |
| 028920126   | 45 Ft. Camera Pole   | Each     | \$ .00         |           |                |
| 028920128   | 1 inch Dia. X 36 inch Anchor Bolt with Hardware            | Each     | \$ .00         |           |                |
| 028920130   | 1.5 inch Dia. X 54 inch Anchor Bolt with Hardware          | Each     | \$ .00         |           |                |
| 028920132   | Camera Mount, Video Detection with 46 inch Tube            | Each     | \$ .00         |           |                |
| 02892040D   | _____ PVC Conduit Schedule                                 | ft       | \$ .00         |           |                |
| 028960010   | Boundary Survey and Survey Plat                            | Lump     | \$5,000.00     | 1         | 2001           |
| 028960020   | Right-of-Way Marker  | Each     | \$300.00       | 1         | 2001           |
| * 029110010 | Wood Fiber Mulch $\$1,450/\text{acre} = 0.40\$/\text{m}^2$ | Acre     | \$1,450.00     | 2         | 2001           |
| 029110020   | Straw Mulch  | Acre     | \$ .00         |           |                |
| 029120010   | Contractor Furnished Topsoil                               | sq yd    | \$2.27         | 71,304    | 2001           |
| 029120020   | Contractor Furnished Topsoil                               | Ton      | \$28.00        | 141       | 2001           |
| 029120030   | Strip and Stockpile Topsoil                                | cu yd    | \$6.10         | 90        | 2001           |
| 029120040   | Spread Stockpiled Topsoil                                  | sq yd    | \$1.29         | 5,300     | 2001           |
| 029220010   | Drill Seed   | Acre     | \$476.53       | 98        | 2002           |
| 029220020   | Turf Seed  | 1000sqft | \$ .00         |           |                |
| 029220030   | Broadcast Seed   | Acre     | \$650.00       | 2         | 2003           |
| 029220040   | Broadcast Seed   | 1000sqft | \$79.60        | 7         | 2003           |
| 029220050   | Broadcast Turf Seed  | 1000sqft | \$ .00         |           |                |
| 029220060   | Turf Sod   | sq ft    | \$ .40         | 1,800     | 2003           |
| 029310010   | Pole Planting  | Each     | \$50.00        | 10        | 2002           |
| 029310020   | Willow Planting  | Each     | \$25.00        | 60        | 2002           |
| 029320010   | Plant - Tubeling   | Each     | \$ .00         |           |                |
| 029320030   | Plant - No. 1 Container                                    | Each     | \$ .00         |           |                |
| 029320050   | Plant - No. 5 Container                                    | Each     | \$ .00         |           |                |
| 02932006D   | Plant - No. _____ Container                                | Each     | \$ .00         |           |                |
| 029320070   | Plant - 1-1/4 inch Caliper                                 | Each     | \$ .00         |           |                |
| 02932008D   | Plant - _____ inch Caliper                                 | Each     | \$ .00         |           |                |
| 029320090   | Plant - 1-1/2 inch Caliper                                 | Each     | \$ .00         |           |                |
| 029320110   | Plant - 6 ft   | Each     | \$ .00         |           |                |
| 029320130   | Plant - 5 ft   | Each     | \$ .00         |           |                |
| 02932014D   | Plant - _____ ft   | Each     | \$ .00         |           |                |
| 029360010   | Establishment Period                                       | Lump     | \$ .00         |           |                |
| 029380010   | Tree Pruning   | Each     | \$252.00       | 1         | 2002           |
| 029610010   | Rotomilling  | sq yd    | \$ .55         | 1,259,320 | 2002           |
| 029610020   | Rotomilling - 1 Inch                                       | sq yd    | \$1.35         | 7,000     | 2003           |
| 029610025   | Rotomilling - 1 1/2 Inch                                   | sq yd    | \$ .00         |           |                |
| 029610030   | Rotomilling - 2 Inch                                       | sq yd    | \$ .42         | 121,000   | 2003           |
| 029610040   | Rotomilling - 3 Inch                                       | sq yd    | \$ .00         |           |                |
| 029610050   | Rotomilling - 4 Inch                                       | sq yd    | \$1.00         | 75,723    | 2002           |
| 029610060   | Rotomilling - 5 Inch                                       | sq yd    | \$ .00         |           |                |
| 029610070   | Rotomilling - 6 Inch                                       | sq yd    | \$ .00         |           |                |
| 029620010   | In-Place Cold Recycled Asphaltic Base                      | sq yd    | \$ .00         |           |                |
| 029630010   | Profile Rotomilling  | sq yd    | \$ .00         |           |                |
| 029660010   | Recycled Surface   | sq yd    | \$ .00         |           |                |
| 029660020   | Rejuvenating Agent   | Ton      | \$ .00         |           |                |
| 029670010   | Surface Repaving   | sq yd    | \$ .00         |           |                |
| 029670020   | Rejuvenating Agent   | Ton      | \$ .00         |           |                |
| 032110010   | Reinforcing Steel - Coated                                 | lb       | \$ .68         | 274,270   | 2003           |
| 032110020   | Reinforcing Steel  | lb       | \$ .60         | 23,924    | 2003           |
| 033100010   | Structural Concrete  | Lump     | \$17,750.00    | 3         | 2003           |
| 033100020   | Concrete- Small Structure                                  | cu yd    | \$500.00       | 2         | 2003           |

# Earthwork Prism

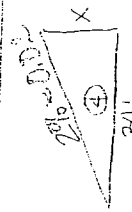
Anelope Island, Trans Bay, Calif., U.S.

STAMMER

No. 937 811E

Engineer's Computation Pad

1283/02



$$\frac{X}{24} = \frac{2}{100} \quad X = \frac{(2)(34)}{100} = 0.68$$

$$A_4 = \frac{1}{2}(24)(0.68) = 8.16 \text{ ft}^2$$

$$A_5 = (24)(4.32) = 103.68 \text{ ft}^2$$

$$5.08 - 4.32 = 0.76$$



$$\frac{X}{20} = \frac{1}{10} \quad X = \frac{(2)(1)}{10} = 0.2$$

$$A_2 = \frac{1}{2}(20)(0.2) = 2 \text{ ft}^2$$

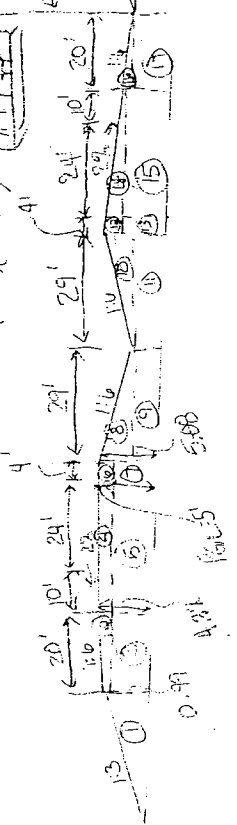
$$4.32 - 3.33 = 0.99$$

$$A_3 = (0.99)(20) = 19.8 \text{ ft}^2$$



$$\frac{X}{0.99} = \frac{3}{1} \quad X = (3)(0.99) = 2.97$$

$$A_1 = \frac{1}{2}(2.97)(0.99) = 1.47 \text{ ft}^2$$

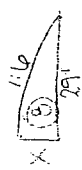


$$\frac{X}{24} = \frac{2}{100} \quad X = \frac{(2)(4)}{100} = 0.08$$

$$A_6 = \frac{1}{2}(4)(0.08) = 0.16 \text{ ft}^2$$

$$5.08 - 4.92 = 0.16$$

$$A_7 = (4.92)(4) = 19.68 \text{ ft}^2$$



$$\frac{X}{29} = \frac{1}{10} \quad X = \frac{(1)(29)}{10} = 2.9$$

$$A_8 = \frac{1}{2}(29)(2.9) = 42.05 \text{ ft}^2$$

$$5.08 - 4.33 = 0.75$$

$$A_9 = (0.75)(29) = 21.75 \text{ ft}^2$$

$$A_0 = A_3 = 70.08 \text{ ft}^2$$

$$A_{11} = A_9 = 725 \text{ ft}^2$$

$$A_{12} = A_0 = 0.16 \text{ ft}^2$$

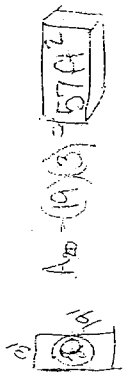
$$A_3 = A_7 = 19.68 \text{ ft}^2$$

$$A_{14} = A_4 = 11.56 \text{ ft}^2$$

$$A_{15} = A_5 = 146.88 \text{ ft}^2$$

$$A_{16} = A_2 = 33.3 \text{ ft}^2$$

$$A_{17} = A_6 = 19.8 \text{ ft}^2$$

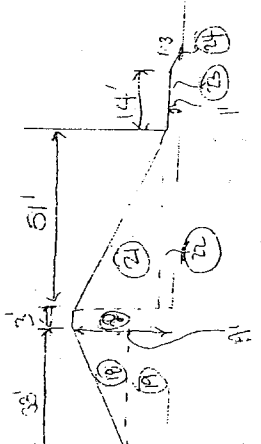


$$1556.14 \text{ ft}^2$$

$$144.56 \text{ ft}^2$$

$$\frac{X}{33} = \frac{1}{2} \quad X = \frac{(1)(33)}{2} = 16.5$$

$$A_{18} = \frac{1}{2}(33)(16.5) = 272.25 \text{ ft}^2$$



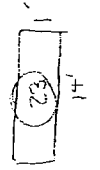
$$A_{19} = (33)(2.5) = 82.5 \text{ ft}^2$$



$$A_{21} = \frac{1}{2}(18)(18) = 459.0 \text{ ft}^2$$



$$A_{22} = (5)(1) = 51 \text{ ft}^2$$



$$A_{23} = (1)(14) = 14 \text{ ft}^2$$



$$A_{24} = 3 \text{ ft}^2$$

General Note 4  
Earthwork Price



# General Note of Earthwork Prism

Geotextile width for 80 m

80% of 54 =

Pavement width

~~18 ft~~

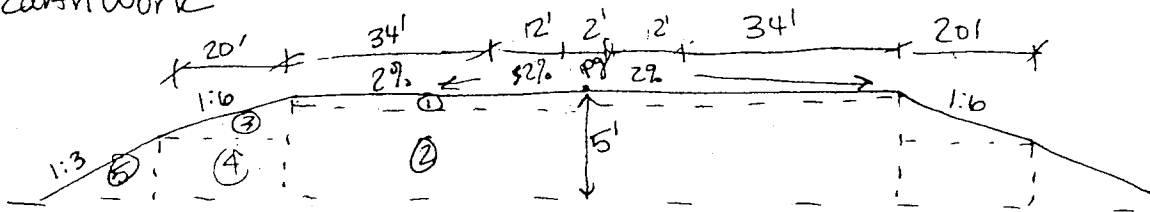
used to be 4 ft shlds now 12 ft plus 2 ft for barrier

$$\therefore 12 - 4 = 8 \text{ ft}$$

$$\text{Total add to pavement width} = (8 * 2) + 2 = 18 \text{ ft} \approx 6 \text{ m}$$

$$23 \text{ m} + 6 \text{ m} = 29 \text{ m}$$

Earthwork



$$A_1 = \frac{2\% = 0.02}{47'} \times$$

$$\frac{x}{47} = \frac{2}{100}$$

$$x = \frac{2}{100} (47) = 0.94$$

$$A_1 = \frac{1}{2} (47) (0.94) = 22.09 \text{ ft}^2$$

$$A_2 = \boxed{\phantom{000}} \begin{matrix} 5 - 0.94 = 4.06 \\ 47 \end{matrix}$$

$$A_2 = (4.06) (47) = 190.82 \text{ ft}^2$$

$$A_3 = \frac{1:6}{20} \times$$

$$\frac{x}{20} = \frac{1}{6}$$

$$x = \frac{1}{6} (20) = 3.33$$

$$A_3 = \frac{1}{2} (20) (3.33) = 33.33 \text{ ft}^2$$

$$A_4 = \boxed{\phantom{000}} \begin{matrix} 5 - 0.94 - 3.33 = 0.73 \\ 20 \end{matrix}$$

$$A_4 = 20 (0.73) = 14.6 \text{ ft}^2$$

$$A_5 = \frac{1:3}{y} \begin{matrix} 0.73 \end{matrix}$$

$$\frac{y}{0.73} = \frac{3}{1}$$

$$y = \frac{3}{1} (0.73) = 2.19$$

$$A_5 = \frac{1}{2} (2.19) (0.73) = 0.8 \text{ ft}^2$$

$$A_{\text{half TOTAL}} = 22.09 + 190.82 + 33.33 + 14.6 + 0.8 = 261.64$$

$$A_{\text{TOTAL}} = (2) (261.64) = 523 \text{ ft}^2 \approx \underline{\underline{50 \text{ m}^2}} \rightarrow \text{NO BERM}$$

# Utah Department of Transportation

CSI - INCH/POUND

## Statewide Standard Item Average Prices and Total Quantities

General Note 5  
Earthwork Cost

| Item Number | Description                              | UOM      | Avg Unit Price | Total Qty | Last Year Avgd |
|-------------|--|----------|----------------|-----------|----------------|
| 000000003   | Group Stockpile                          | Lump     | \$ .00         |           |                |
| 00830001U   | Equal Opportunity Training               | Hour     | \$ .80         | 7,000     | 2003           |
| 012820001   | Fuel Cost                                | Lump     | \$ .00         |           |                |
| 012820002   | Asphalt Cost                             | Lump     | \$ .00         |           |                |
| 012850010   | Mobilization                             | Lump     | \$127,520.00   | 5         | 2003           |
| 013150010   | Public Information Services              | Lump     | \$2,250.00     | 2         | 2003           |
| 015540005   | Traffic Control                          | Lump     | \$75,827.50    | 4         | 2003           |
| 015540010   | Traffic Control Maintainer               | Cal d    | \$10.00        | 300       | 2003           |
| 015540015   | Pilot Car                                | Hour     | \$ .00         |           |                |
| 015540020   | Flagging (State Projects)                | Hour     | \$ .00         |           |                |
| 015540022   | Flagging (Federal Projects)              | Hour     | \$ .00         |           |                |
| 015540025   | Construction Sign                        | sq ft-d  | \$ .00         |           |                |
| 015540030   | Plastic Barrels                          | Dev-d    | \$ .00         |           |                |
| 015540035   | Barricades, Type I                       | Dev-d    | \$ .00         |           |                |
| 015540040   | Barricades, Type II                      | Dev-d    | \$ .00         |           |                |
| 015540045   | Barricades, Type III                     | ft-d     | \$ .00         |           |                |
| 015540050   | Vertical Panel                           | Dev-d    | \$ .00         |           |                |
| 015540055   | Advance Warning Arrow, Type B Stationary | Hour     | \$ .00         |           |                |
| 015540060   | Advance Warning Arrow, Type C Stationary | Hour     | \$ .00         |           |                |
| 015540065   | Advance Warning Arrow, Type B Moving     | Hour     | \$ .00         |           |                |
| 015540070   | Advance Warning Arrow, Type C Moving     | Hour     | \$ .00         |           |                |
| 015580005   | Temporary Pavement Markings              | ft       | \$ .00         |           |                |
| 015610010   | Environmental Fence                      | ft       | \$1.60         | 7,600     | 2001           |
| 015710010   | Check Dam (Straw or Hay Bale)            | ft       | \$8.50         | 80        | 2002           |
| 015710020   | Check Dam (Stone)                        | cu yd    | \$30.00        | 16        | 2003           |
| 015710030   | Silt Fence                               | ft       | \$2.08         | 8,250     | 2003           |
| 015710040   | Slope Drain                              | ft       | \$20.00        | 32        | 2003           |
| 015710050   | Drop-Inlet Barriers (Straw or Hay Bale)  | ft       | \$15.41        | 32        | 2002           |
| 015710060   | Drop-Inlet Barriers (Stone)              | cu ft    | \$2.50         | 70        | 2003           |
| 015710070   | Drop-Inlet Barriers (Silt Fence)         | ft       | \$ .00         |           |                |
| 015710080   | Sediment Trap                            | cu ft    | \$2.00         | 350       | 2003           |
| 015710090   | Temporary Berm                           | ft       | \$5.00         | 160       | 2003           |
| 015710100   | Curb Inlet Barrier                       | Each     | \$8.20         | 32        | 2002           |
| 015720010   | Dust Control and Watering                | gal      | \$ .01         | 360,740   | 2003           |
| 015720020   | Dust Control and Watering                | 1000 gal | \$4.36         | 18,050    | 2003           |
| 015740010   | Environmental Control Supervisor         | Lump     | \$11,250.00    | 2         | 2003           |
| 017210010   | Survey                                   | Lump     | \$42,145.83    | 12        | 2002           |
| 018910010   | Move Street Sign                         | Each     | \$160.00       | 3         | 2002           |
| 018910020   | Move Mailbox                             | Each     | \$166.50       | 92        | 2002           |
| 018910030   | Mailbox Assembly                         | Each     | \$ .00         |           |                |
| 018920010   | Reconstruct Catch Basin                  | Each     | \$866.13       | 53        | 2002           |
| 018920020   | Reconstruct Cleanout Box                 | Each     | \$450.00       | 4         | 2003           |
| 018920030   | Reconstruct Meter Box                    | Each     | \$200.00       | 1         | 2003           |
| 018920040   | Reconstruct Valve Box                    | Each     | \$180.00       | 12        | 2003           |
| 018920050   | Reconstruct Manhole                      | Each     | \$220.94       | 32        | 2003           |
| 018920060   | Reconstruct Monument Box                 | Each     | \$ .00         |           |                |
| 020560010   | Borrow                                   | Ton      | \$5.68         | 12,208    | 2003           |
| 020560015   | Granular Borrow                          | cu yd    | \$11.50        | 1,654     | 2003           |
| 020560020   | Granular Borrow                          | Ton      | \$3.93         | 666,211   | 2002           |
| 020560025   | Granular Backfill Borrow                 | cu yd    | \$16.50        | 2,700     | 2003           |
| 020560030   | Granular Backfill Borrow                 | Ton      | \$10.80        | 600       | 2003           |
| 020560040   | Sand                                     | Ton      | \$ .00         |           |                |
| 020560050   | Clay                                     | Ton      | \$ .00         |           |                |
| 020610010   | Free Draining Granular Backfill Borrow   | Ton      | \$ .00         |           |                |
| 020610020   | Free Draining Granular Backfill Borrow   | cu yd    | \$33.72        | 379       | 2003           |
| 020610030   | Underdrain Granular Backfill             | Ton      | \$ .00         |           |                |
| 020610040   | Underdrain Granular Backfill             | cu yd    | \$ .00         |           |                |
| 020750010   | Geotextile - Separation                  | sq yd    | \$2.48         | 505       | 2003           |
| 020750020   | Geotextiles - Erosion Control            | sq yd    | \$2.00         | 726       | 2002           |

$$11.50 / \text{cu yd} \left( \frac{1.35 \text{ yd}^3}{1 \text{ m}^3} \right) = \$15.06 / \text{m}^3$$

# Utah Department of Transportation

CSI - METRIC

Statewide Standard Item Average Prices and Total Quantities

General Note 5:  
Earthwork &  
Geotextile Costs

| Item Number | Description                                      | UOM   | Avg Unit Price | Total Qty | YearAvgd |
|-------------|--|-------|----------------|-----------|----------|
| 000000003   | Group Stockpile                                  | Lump  | \$ .00         |           |          |
| 00830001U   | Equal Opportunity Training                       | Hour  | \$ .80         | 31,300    | 2002     |
| 012820001   | Fuel Cost  | Lump  | \$ .00         |           |          |
| 012820002   | Asphalt Cost                                     | Lump  | \$ .00         |           |          |
| 012850010   | Mobilization                                     | Lump  | \$98,521.88    | 62        | 2002     |
| 013150010   | Public Information Services                      | Lump  | \$3,824.42     | 19        | 2002     |
| 015540005   | Traffic Control                                  | Lump  | \$36,222.96    | 57        | 2002     |
| 015540010   | Traffic Control Maintainer                       | Cal d | \$150.00       | 90        | 2002     |
| 015540015   | Pilot Car  | Hour  | \$ .00         |           |          |
| 015540020   | Flagging (State Projects)                        | Hour  | \$ .00         |           |          |
| 015540022   | Flagging (Federal Projects)                      | Hour  | \$15.77        | 104       | 2002     |
| 015540025   | Construction Sign                                | m2-d  | \$6.00         | 570       | 2002     |
| 015540030   | Plastic Barrels                                  | Dev-d | \$ .67         | 455       | 2001     |
| 015540035   | Barricades - Type I                              | Dev-d | \$ .00         |           |          |
| 015540040   | Barricades - Type II                             | Dev-d | \$ .00         |           |          |
| 015540045   | Barricades - Type III                            | m-d   | \$1.50         | 1,440     | 2002     |
| 015540050   | Vertical Panel                                   | Dev-d | \$ .00         |           |          |
| 015540055   | Advance Warning Arrow Panel - Type B -Stationary | Hour  | \$ .00         |           |          |
| 015540060   | Advance Warning Arrow Panel - Type C -Stationary | Hour  | \$4.00         | 312       | 2001     |
| 015540065   | Advance Warning Arrow Panel - Type B -Moving     | Hour  | \$ .00         |           |          |
| 015540070   | Advance Warning Arrow Panel - Type C -Moving     | Hour  | \$ .00         |           |          |
| 015580005   | Temporary Pavement Markings                      | m     | \$ .00         |           |          |
| 015610010   | Environmental Fence                              | m     | \$5.76         | 2,951     | 2002     |
| 015710010   | Check Dam (Straw or Hay Bale)                    | m     | \$15.00        | 40        | 2002     |
| 015710020   | Check Dam (Stone)                                | m3    | \$75.16        | 154       | 2002     |
| 015710030   | Silt Fence                                       | m     | \$6.69         | 5,043     | 2002     |
| 015710040   | Slope Drain                                      | m     | \$49.70        | 193       | 2001     |
| 015710050   | Drop-Inlet Barriers (Straw or Hay Bale)          | m     | \$23.04        | 36        | 2001     |
| 015710060   | Drop-Inlet Barriers (Stone)                      | m3    | \$238.32       | 95        | 2002     |
| 015710070   | Drop-Inlet Barriers (Silt Fence)                 | m     | \$6.00         | 65        | 2002     |
| 015710080   | Sediment Trap                                    | m3    | \$53.29        | 76        | 2001     |
| 015710090   | Temporary Berm                                   | m     | \$20.00        | 70        | 2002     |
| 015710100   | Curb Inlet Barrier                               | Each  | \$ .00         |           |          |
| 015720010   | Dust Control and Watering                        | kL    | \$1.69         | 331,862   | 2002     |
| 017210010   | Survey (Specialty Item)                          | Lump  | \$23,143.89    | 9         | 2002     |
| 018910010   | Move Street Sign                                 | Each  | \$162.25       | 20        | 2002     |
| 018910020   | Move Mailbox                                     | Each  | \$141.51       | 57        | 2002     |
| 018910030   | Mailbox Assembly                                 | Each  | \$150.00       | 2         | 2002     |
| 018920010   | Reconstruct Catch Basin                          | Each  | \$781.23       | 42        | 2002     |
| 018920020   | Reconstruct Cleanout Box                         | Each  | \$640.90       | 40        | 2002     |
| 018920030   | Reconstruct Meter Box                            | Each  | \$215.27       | 15        | 2002     |
| 018920040   | Reconstruct Valve Box                            | Each  | \$284.38       | 335       | 2002     |
| 018920050   | Reconstruct Manhole                              | Each  | \$547.98       | 575       | 2002     |
| 018920060   | Reconstruct Monument Box                         | Each  | \$407.72       | 27        | 2002     |
| 020560005   | Borrow   | m3    | \$8.81         | 12,802    | 2002     |
| 020560010   | Borrow   | Mg    | \$2.59         | 295,340   | 2002     |
| 020560015   | Granular Borrow                                  | m3    | \$8.98         | 66,685    | 2002     |
| 020560020   | Granular Borrow                                  | Mg    | \$8.25         | 46,058    | 2002     |
| 020560025   | Granular Backfill Borrow                         | m3    | \$28.95        | 3,705     | 2002     |
| 020560030   | Granular Backfill Borrow                         | Mg    | \$10.92        | 1,920     | 2001     |
| 020560035   | Sand   | m3    | \$ .00         |           |          |
| 020560040   | Sand   | Mg    | \$ .00         |           |          |
| 020560045   | Clay   | m3    | \$50.00        | 12        | 2002     |
| 020560050   | Clay   | Mg    | \$ .00         |           |          |
| 020610010   | Free Draining Granular Backfill Borrow           | Mg    | \$21.00        | 500       | 2001     |
| 020610020   | Free Draining Granular Backfill Borrow           | m3    | \$60.95        | 7         | 2001     |
| 020610030   | Underdrain Granular Backfill                     | Mg    | \$ .00         |           |          |
| 020610040   | Underdrain Granular Backfill                     | m3    | \$95.00        | 232       | 2001     |
| 020750010   | Geotextiles - Separation                         | m2    | \$1.73         | 28,455    | 2002     |

Utah Department of Transportation  
Abstract of Bids

Project No: NPS-0191(31)131  
Project Name: ARCHES NATIONAL PARK ENTRANCE  
Type of Construction: NEW PARK ENTRANCE AND TURN LANES ON SR-191  
Estimate Completion date on or before 07/01/2003  
County: GRAND (19)

04/10/2003 Page 1 of 2

Bidder:  
LEGRAND JOHNSON CONST CO  
P.O. BOX 248  
LOGAN, UT 84323

Engineer's Estimate

| No.                 | Item No.  | Description  | Qty   | Unit | Unit Price | Amount     | Unit Price | Amount    | Unit Price | Amount     |
|---------------------|-----------|--|-------|------|------------|------------|------------|-----------|------------|------------|
| <b>10 - ROADWAY</b> |           |  |       |      |            |            |            |           |            |            |
| 1                   | 012850010 | Mobilization   |       |      |            |            |            |           |            |            |
| 2                   | 013150010 | Public Information Services                                      | 1     | Lump | 50,000.00  | 50,000.00  |            | 50,000.00 |            |            |
| 3                   | 015540005 | Traffic Control  | 1     | Lump | 2,500.00   | 2,500.00   |            | 1,500.00  |            |            |
| 4                   | 015610010 | Environmental Fence  | 1     | Lump | 15,000.00  | 15,000.00  |            | 66,100.00 |            |            |
| 5                   | 015710020 | Check Dam (Stone)  | 2200  | m    | 5.00       | 11,000.00  |            | 5.25      |            |            |
| 6                   | 015720010 | Dust Control and Watering  | 11    | m3   | 80.00      | 880.00     |            | 75.00     |            |            |
| 7                   | 017210010 | Survey (Specialty Item)  | 5003  | kl   | 1.95       | 9,755.85   |            | 6.50      |            |            |
| 8                   | 020560010 | Borrow   | 1     | Lump | 20,000.00  | 20,000.00  |            | 33,000.00 |            |            |
| 9                   | 020560015 | Granular Borrow  | 38000 | Mg   | 5.50       | 209,000.00 |            | 7.05      |            |            |
| 10                  | 020750030 | Geotextiles - Drainage   | 2294  | m3   | 7.50       | 17,205.00  |            | 21.00     |            |            |
| 11                  | 022210080 | Remove Fence   | 1666  | m2   | 1.50       | 2,499.00   |            | 1.65      |            |            |
| 12                  | 022220045 | Obliterate Road  | 30    | m    | 3.50       | 105.00     |            | 8.00      |            |            |
| 13                  | 02223001* | Existing Entrance Closure  | 150   | m    | 10.00      | 1,500.00   |            | 12.00     |            |            |
| 14                  | 02224001* | Rock Chip Stockpile Clean Up                                     | 1     | Lump | 3,500.00   | 3,500.00   |            | 5,000.00  |            |            |
| 15                  | 023160020 | Roadway Excavation (Plan Quantity)                               | 1     | Lump | 1,000.00   | 1,000.00   |            | 500.00    |            |            |
| 16                  | 023730010 | Loose Riprap   | 1519  | m3   | 2.69       | 4,086.11   |            | 5.00      |            |            |
| 17                  | 026100004 | 450 mm Pipe Culvert Class A                                      | 1460  | m3   | 35.00      | 51,100.00  |            | 37.25     |            |            |
| 18                  | 026100006 | 600 mm Pipe Culvert Class A                                      | 48    | m    | 85.00      | 4,080.00   |            | 83.00     |            |            |
| 19                  | 02610001* | 1050 mm x 725 mm Corrugated Steel Pipe                           | 76    | m    | 95.00      | 7,220.00   |            | 125.00    |            |            |
| 20                  | 02610002* | Arch Culvert Class A   | 45    | m    | 175.00     | 7,875.00   |            | 180.00    |            |            |
|                     |           | 1425 mm x 950 mm Corrugated Steel Pipe                           | 29    | m    | 300.00     | 8,700.00   |            | 280.00    |            |            |
| 21                  | 02613001* | Culvert End Sections 1425 mm x 950 mm                            | 2     | Each | 1,000.00   | 2,000.00   |            | 1,000.00  |            |            |
| 22                  | 02613002* | Culvert End Sections 1050 mm x 725 mm                            | 4     | Each | 650.00     | 2,600.00   |            | 650.00    |            |            |
| 23                  | 026130030 | Culvert End Sections 450 mm                                      | 3     | Each | 225.00     | 675.00     |            | 300.00    |            |            |
| 24                  | 026130040 | Culvert End Sections 600 mm                                      | 4     | Each | 275.00     | 1,100.00   |            | 450.00    |            |            |
| 25                  | 026350040 | Rectangular Grate And Frame (Bicycle Safe Grating), Std Dwg 1703 | 6     | Each | 375.00     | 2,250.00   |            | 570.00    |            |            |
| 26                  | 027050010 | Asphalt Pavement Sawing  | 14000 | mm-m | 0.02       | 280.00     |            |           |            |            |
| 27                  | 027210080 | Untreated Base Course 19 mm or 25 mm Max                         | 1965  | m3   | 19.75      | 38,808.75  |            | 0.05      |            |            |
| 28                  | 027410020 | HMA - 19.0 mm  | 2778  | Mg   | 45.00      | 125,010.00 |            | 22.90     |            |            |
| 29                  | 027480010 | Liquid Asphalt MC-70 or MC-250                                   | 20    | Mg   | 300.00     | 6,000.00   |            | 53.80     |            |            |
| 30                  | 027480030 | Emulsified Asphalt SS-1  | 4     | Mg   | 250.00     | 1,000.00   |            | 450.00    |            |            |
| 31                  | 027650005 | Traffic Striping Paint   | 133   | L    | 3.00       | 399.00     |            | 300.00    |            |            |
| 32                  | 027650020 | Pavement Message Paint   | 17    | Each | 50.00      | 850.00     |            | 1,702.25  |            |            |
| 33                  | 027710025 | Concrete Curb and Gutter Type B1                                 | 2120  | m    | 16.00      | 33,920.00  |            | 38.50     |            |            |
|                     |           |  |       |      |            |            |            | 62.75     |            |            |
|                     |           |  |       |      |            |            |            |           |            | 133,030.00 |

General Note  
Geotextile  
Earthwork Cost

# Utah Department of Transportation

CSI - METRIC

## Statewide Standard Item Average Prices and Total Quantities

General Note 8  
Geotextile lost

| Item Number | Description  | UOM    | Avg Unit Price | Total Qty | Last Year Avgd |
|-------------|--|--------|----------------|-----------|----------------|
| * 020750020 | Geotextiles - Erosion Control                                | m2     | \$2.99         | 2,116     | 2002           |
| * 020750030 | Geotextiles - Drainage                                       | m2     | \$1.64         | 10,580    | 2002           |
| 020750040   | Geotextiles - Weed Barrier                                   | m2     | \$2.00         | 160       | 2001           |
| * 020750050 | Geotextiles - Stabilization                                  | m2     | \$2.50         | 376       | 2002           |
| 020780010   | Asphalt Fabric   | m2     | \$0.00         |           |                |
| 020820010   | Water Meter, Contractor Furnished                            | Each   | \$2,500.00     | 1         | 2002           |
| 020820020   | Relocate Water Meter   | Each   | \$500.00       | 4         | 2002           |
| 022210015   | Remove Bridge  | Each   | \$16,001.88    | 9         | 2002           |
| 02221001D   | Remove Building, Basement, and Foundation Parcel # _____     | Parcel | \$0.00         |           |                |
| 022210020   | Remove Box Culvert   | Each   | \$4,162.50     | 8         | 2001           |
| 022210025   | Remove Manhole   | Each   | \$536.73       | 49        | 2002           |
| 02221002D   | Remove Building, Basement, and Foundation Parcel # _____     | Parcel | \$0.00         |           |                |
| 022210030   | Remove Catch Basin   | Each   | \$435.08       | 123       | 2001           |
| 022210035   | Remove Diversion Box   | Each   | \$1,330.00     | 2         | 2002           |
| 02221003D   | Remove Building, Basement, and Foundation Parcel # _____     | Parcel | \$0.00         |           |                |
| 022210040   | Remove Cleanout Box  | Each   | \$254.50       | 4         | 2001           |
| 022210045   | Remove Cattle Guard  | Each   | \$900.00       | 2         | 2002           |
| 02221004D   | Remove Building, Basement, and Foundation Parcel # _____     | Parcel | \$0.00         |           |                |
| 022210050   | Remove Tree  | Each   | \$186.58       | 330       | 2001           |
| 022210055   | Remove Concrete Headwall                                     | Each   | \$1,000.00     | 3         | 2002           |
| 022210056   | Remove Concrete Headwall 300 mm - 900 mm Pipe                | Each   | \$0.00         |           |                |
| 022210057   | Remove Concrete Headwall 910 mm - 1500 Pipe                  | Each   | \$0.00         |           |                |
| 022210058   | Remove Concrete Headwall 1510 mm - 2100 mm Pipe              | Each   | \$0.00         |           |                |
| 022210059   | Remove Concrete Headwall Greater than 2110 mm Pipe           | Each   | \$0.00         |           |                |
| 02221005D   | Remove Building, Basement, and Foundation Parcel # _____     | Parcel | \$0.00         |           |                |
| 022210060   | Remove Septic Tank   | Each   | \$2,200.00     | 1         | 2002           |
| 022210065   | Remove Underground Tank                                      | Each   | \$0.00         |           |                |
| 02221006D   | Remove Building, Basement, and Foundation Parcel # _____     | Parcel | \$0.00         |           |                |
| 022210070   | Remove Buried Fuel Tank                                      | Each   | \$0.00         |           |                |
| 022210075   | Remove Guardrail   | m      | \$6.47         | 2,330     | 2002           |
| 02221007D   | Remove Building, Basement and Foundation Parcel # _____      | Parcel | \$0.00         |           |                |
| 022210080   | Remove Fence   | m      | \$3.65         | 10,425    | 2002           |
| 022210085   | Remove Railroad Track  | m      | \$0.00         |           |                |
| 02221008D   | Remove Building, Basement, and Foundation Parcel # _____     | Parcel | \$0.00         |           |                |
| 022210090   | Remove Utility Pole  | Each   | \$300.79       | 76        | 2001           |
| 022210095   | Remove Pipe Culvert  | m      | \$37.58        | 2,474     | 2002           |
| 022210100   | Remove Culvert End Section                                   | Each   | \$0.00         |           |                |
| 022220005   | Remove Concrete Sidewalk                                     | m2     | \$3.74         | 9,213     | 2002           |
| 022220010   | Remove Concrete Driveway                                     | m2     | \$4.97         | 5,342     | 2002           |
| 022220015   | Remove Concrete Curb   | m      | \$11.76        | 786       | 2002           |
| 022220020   | Remove Concrete Curb and Gutter                              | m      | \$8.82         | 7,763     | 2002           |
| 022220025   | Remove Bituminous Curb                                       | m      | \$2.50         | 800       | 2002           |
| 022220030   | Remove Raised Island   | m      | \$8.50         | 46        | 2002           |
| 022220035   | Remove Concrete Pavement                                     | m2     | \$8.27         | 108       | 2002           |
| 022220040   | Remove Asphalt Pavement                                      | m2     | \$2.07         | 126,891   | 2002           |
| 022220045   | Obliterate Road  | m      | \$2.82         | 905       | 2002           |
| 022250010   | Asphalt Surfacing Removal (Structures)                       | m2     | \$15.62        | 4,300     | 2002           |
| 022260010   | Remove Concrete Slope Protection                             | m2     | \$34.44        | 665       | 2001           |
| 022310010   | Clearing and Grubbing  | Lump   | \$8,932.62     | 21        | 2002           |
| 022310020   | Clearing and Grubbing  | ha     | \$0.00         |           |                |
| 022810010   | Grade Adjustment and Abandonment of Existing Detention Basin | Lump   | \$7,200.00     | 1         | 2001           |
| 023120010   | Landscape Grading  | m2     | \$1.00         | 3,020     | 2002           |
| 023160010   | Roadway Excavation   | m3     | \$5.68         | 148,059   | 2002           |
| 023160020   | Roadway Excavation (Plan Quantity)                           | m3     | \$3.64         | 548,746   | 2002           |
| 023180010   | Small Ditch Excavation                                       | m3     | \$19.58        | 1,012     | 2002           |
| 023180020   | Surface Ditch  | m      | \$4.05         | 2,234     | 2002           |
| 023320010   | Embankment for Bridge  | m3     | \$6.84         | 137,200   | 2001           |
| 023320020   | Embankment for Bridge  | Mg     | \$2.84         | 43,426    | 2002           |
| 023380010   | Refinish Subgrade  | m2     | \$1.00         | 1,965     | 2001           |

## Utah Department of Transportation

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## Statewide Standard Item Average Prices and Total Quantities

General Note 9  
RCP Pipe Cost

| Item Number | Description  | UOM | Avg Unit Price | Total Qty | Year | Last Avg |
|-------------|--|-----|----------------|-----------|------|----------|
| 026100406   | 1050 mm Spiral Rib Aluminum Pipe Culvert Class C                     | m   | \$ .00         |           |      |          |
| 026100408   | 1200 mm Spiral Rib Aluminum Pipe Culvert Class C                     | m   | \$ .00         |           |      |          |
| 026100410   | 300 mm Reinforced Concrete Pipe Culvert Class B                      | m   | \$79.79        | 81        | 2002 |          |
| 026100412   | 450 mm Reinforced Concrete Pipe Culvert Class B                      | m   | \$108.23       | 183       | 2002 |          |
| 026100414   | 600 mm Reinforced Concrete Pipe Culvert Class B                      | m   | \$100.00       | 80        | 2002 |          |
| 026100416   | 750 mm Reinforced Concrete Pipe Culvert Class B                      | m   | \$138.00       | 225       | 2002 |          |
| 026100418   | 900 mm Reinforced Concrete Pipe Culvert Class B                      | m   | \$190.00       | 40        | 2000 |          |
| 026100420   | 1050 mm Reinforced Concrete Pipe Culvert Class B                     | m   | \$230.00       | 578       | 2001 |          |
| 026100422   | 1200 mm Reinforced Concrete Pipe Culvert Class B                     | m   | \$284.00       | 26        | 2001 |          |
| 026100424   | 300 mm Reinforced Concrete Pipe Culvert Class C                      | m   | \$85.00        | 35        | 2002 |          |
| 026100426   | 450 mm Reinforced Concrete Pipe Culvert Class C                      | m   | \$130.00       | 30        | 2002 |          |
| * 026100428 | 600 mm Reinforced Concrete Pipe Culvert Class C 24"                  | m   | \$99.58        | 65        | 2001 |          |
| 026100430   | 750 mm Reinforced Concrete Pipe Culvert Class C                      | m   | \$ .00         |           |      |          |
| * 026100432 | 900 mm Reinforced Concrete Pipe Culvert Class C 36"                  | m   | \$160.00       | 150       | 2001 |          |
| 026100434   | 1050 mm Reinforced Concrete Pipe Culvert Class C                     | m   | \$ .00         |           |      |          |
| 026100436   | 1200 mm Reinforced Concrete Pipe Culvert Class C                     | m   | \$ .00         |           |      |          |
| 026100438   | 450 mm Non-Reinforced Concrete Pipe Culvert Class B                  | m   | \$ .00         |           |      |          |
| 026100440   | 600 mm Non-Reinforced Concrete Pipe Culvert Class B                  | m   | \$ .00         |           |      |          |
| 026100442   | 750 mm Non-Reinforced Concrete Pipe Culvert Class B                  | m   | \$ .00         |           |      |          |
| 026100444   | 900 mm Non-Reinforced Concrete Pipe Culvert Class B                  | m   | \$ .00         |           |      |          |
| 026100446   | 450 mm Non-Reinforced Concrete Pipe Culvert Class C                  | m   | \$ .00         |           |      |          |
| 026100448   | 600 mm Non-Reinforced Concrete Pipe Culvert Class C                  | m   | \$ .00         |           |      |          |
| 026100450   | 750 mm Non-Reinforced Concrete Pipe Culvert Class C                  | m   | \$ .00         |           |      |          |
| 026100452   | 900 mm Non-Reinforced Concrete Pipe Culvert Class C                  | m   | \$ .00         |           |      |          |
| 026100454   | 300 mm Elliptical Reinforced Concrete Pipe Culvert Class B           | m   | \$ .00         |           |      |          |
| 026100456   | 450 mm Elliptical Reinforced Concrete Pipe Culvert Class B           | m   | \$ .00         |           |      |          |
| 026100458   | 600 mm Elliptical Reinforced Concrete Pipe Culvert Class B           | m   | \$ .00         |           |      |          |
| 026100460   | 750 mm Elliptical Reinforced Concrete Pipe Culvert Class B           | m   | \$ .00         |           |      |          |
| 026100462   | 900 mm Elliptical Reinforced Concrete Pipe Culvert Class B           | m   | \$ .00         |           |      |          |
| 026100464   | 1050 mm Elliptical Reinforced Concrete Pipe Culvert Class B          | m   | \$ .00         |           |      |          |
| 026100466   | 1200 mm Elliptical Reinforced Concrete Pipe Culvert Class B          | m   | \$ .00         |           |      |          |
| 026100468   | 300 mm Elliptical Reinforced Concrete Pipe Culvert Class C           | m   | \$ .00         |           |      |          |
| 026100470   | 450 mm Elliptical Reinforced Concrete Pipe Culvert Class C           | m   | \$100.00       | 109       | 2002 |          |
| 026100472   | 600 mm Elliptical Reinforced Concrete Pipe Culvert Class C           | m   | \$ .00         |           |      |          |
| 026100474   | 750 mm Elliptical Reinforced Concrete Pipe Culvert Class C           | m   | \$ .00         |           |      |          |
| 026100476   | 900 mm Elliptical Reinforced Concrete Pipe Culvert Class C           | m   | \$ .00         |           |      |          |
| 026100478   | 1050 mm Elliptical Reinforced Concrete Pipe Culvert Class C          | m   | \$ .00         |           |      |          |
| 026100480   | 1200 mm Elliptical Reinforced Concrete Pipe Culvert Class C          | m   | \$ .00         |           |      |          |
| 026100482   | 1800 mm Structural Steel Plate Pipe Culvert Class D                  | m   | \$ .00         |           |      |          |
| 026100484   | 2100 mm Structural Steel Plate Pipe Culvert Class D                  | m   | \$ .00         |           |      |          |
| 026100486   | 2400 mm Structural Steel Plate Pipe Culvert Class D                  | m   | \$ .00         |           |      |          |
| 026100488   | 2700 mm Structural Steel Plate Pipe Culvert Class D                  | m   | \$ .00         |           |      |          |
| 02610048D   | _____ mm Structural Steel Plate Pipe Culvert Class D                 | m   | \$ .00         |           |      |          |
| 026100490   | 1800 mm Structural Steel Plate Pipe Culvert Class E                  | m   | \$ .00         |           |      |          |
| 026100492   | 2100 mm Structural Steel Plate Pipe Culvert Class E                  | m   | \$ .00         |           |      |          |
| 026100494   | 2400 mm Structural Steel Plate Pipe Culvert Class E                  | m   | \$ .00         |           |      |          |
| 026100496   | 2700 mm Structural Steel Plate Pipe Culvert Class E                  | m   | \$ .00         |           |      |          |
| 026100498   | 2050 mm x 1500 mm Structural Steel Plate Pipe Arch Culvert Class D   | m   | \$ .00         |           |      |          |
| 02610049D   | _____ mm Structural Steel Plate Pipe Culvert Class E                 | m   | \$ .00         |           |      |          |
| 026100500   | 2400 mm x 1720 mm Structural Steel Plate Pipe Arch Culvert Class D   | m   | \$ .00         |           |      |          |
| 026100502   | 2840 mm x 1970 mm Structural Steel Plate Pipe Arch Culvert Class D   | m   | \$ .00         |           |      |          |
| 026100504   | 3240 mm x 2120 mm Structural Steel Plate Pipe Arch Culvert Class D   | m   | \$ .00         |           |      |          |
| 026100506   | 2050 mm x 1500 mm Structural Steel Plate Pipe Arch Culvert Class E   | m   | \$ .00         |           |      |          |
| 026100508   | 2400 mm x 1720 mm Structural Steel Plate Pipe Arch Culvert Class E   | m   | \$ .00         |           |      |          |
| 02610050D   | _____ mm x _____ mm Structural Steel Plate Pipe Arch Culvert Class D | m   | \$ .00         |           |      |          |
| 026100510   | 2840 mm x 1920 mm Structural Steel Plate Pipe Arch Culvert Class E   | m   | \$ .00         |           |      |          |
| 026100512   | 3240 mm x 2120 mm Structural Steel Plate Pipe Arch Culvert Class E   | m   | \$ .00         |           |      |          |
| 026100514   | 1800 mm Aluminum Alloy Structural Plate Pipe Culvert Class D         | m   | \$ .00         |           |      |          |
| 026100516   | 2100 mm Aluminum Alloy Structural Plate Pipe Culvert Class D         | m   | \$ .00         |           |      |          |

Utah Department of Transportation

Abstract of Bids

Project No: \*HDP-15-6(124)266, \*HDP-15-6(124)266NP  
 Project Name: I-15 & UNIVERSITY AVE  
 Type of Construction: RECONSTRUCT INTERCHANGE  
 Estimate Completion date on or before 07/01/1998  
 County: UTAH (49)

06/13/2002  
 Bidder:  
 RALPH L WADSWORTH  
 CONSTR CO INC  
 71 E WADSWORTH PARK DR  
 DRAPER, UT 84020

Bidder:  
 WADSWORTH BROS CONST CO  
 INC  
 13526 S. 110 W.  
 DRAPER, UT 84020

Engineer's Estimate

| No. | Item No.   | Description                                     | Qty   | Unit  | Unit Price | Amount    | Unit Price | Amount | Unit Price | Amount     |
|-----|------------|---|-------|-------|------------|-----------|------------|--------|------------|------------|
| 124 | 826000020  | REMOVAL OF PAVEMENT MESSAGE                     | 33    | Each  | 29.00      | 957.00    |            |        |            |            |
| 125 | 850000010  | TRAFFIC CONTROL SUPERVISOR                      | 410   | Cal d | 200.00     | 82,000.00 |            |        | 40.00      | 1,320.00   |
| 126 | 851000010  | CONSTRUCTION SIGN                               | 8700  | m2-d  | 1.30       | 11,310.00 |            |        | 300.00     | 123,000.00 |
| 127 | 851000020  | BARRICADE (TYPE III)                            | 21900 | m-d   | 0.40       | 8,760.00  |            |        | 1.10       | 9,570.00   |
| 128 | 851000080  | CHANNELIZING DEVICE                             | 92700 | Dev-d | 0.35       | 32,445.00 |            |        | 0.26       | 5,694.00   |
| 129 | 852000010  | FLAGGING  | 2000  | Hour  | 14.20      | 28,400.00 |            |        | 0.57       | 52,839.00  |
| 130 | 853000001* | ADVANCE WARNING ARROW PANEL TYPE C STATIONARY   | 11500 | Hour  | 6.00       | 69,000.00 |            |        | 10.50      | 21,000.00  |
| 131 | 888000001* | ATTENUATOR TYPE Z                               | 1     | Each  |            |           |            |        | 8.00       | 92,000.00  |
| 132 | 888000010* | ATTENUATOR TYPE A                               | 2     | Each  | 8,000.00   | 8,000.00  |            |        |            |            |
| 133 | 888000030* | ATTENUATOR TYPE C                               | 2     | Each  | 16,000.00  | 32,000.00 |            |        | 18,000.00  | 18,000.00  |
| 134 | 888000090* | END SECTION TYPE F                              | 1     | Each  | 16,000.00  | 32,000.00 |            |        | 16,500.00  | 33,000.00  |
| 135 | 888000095* | END SECTION TYPE R                              | 3     | Each  | 1,200.00   | 1,200.00  |            |        | 25,000.00  | 50,000.00  |
| 136 | 901000090* | 300 MM CORRUGATED POLYETHYLENE PIPE CULVERT     | 25    | m     | 5,000.00   | 15,000.00 |            |        | 3,500.00   | 3,500.00   |
| 137 | 90101400*  | 300 MM SMOOTH LINED PIPE CULVERT CLASS A        | 65    | m     | 60.00      | 1,500.00  |            |        | 6,500.00   | 19,500.00  |
| 138 | 90101410*  | 450 MM SMOOTH LINED PIPE CULVERT CLASS A        | 205   | m     | 55.00      | 3,575.00  |            |        | 52.00      | 1,300.00   |
| 139 | 90101420*  | 600 MM SMOOTH LINED PIPE CULVERT CLASS A        | 870   | m     | 70.00      | 14,350.00 |            |        | 82.00      | 16,810.00  |
| 140 | 90101430*  | 675 MM SMOOTH LINED PIPE CULVERT CLASS A        | 15    | m     | 100.00     | 87,000.00 |            |        | 80.00      | 69,600.00  |
| 141 | 90101440*  | 900 MM SMOOTH LINED PIPE CULVERT CLASS A        | 370   | m     | 110.00     | 1,650.00  |            |        | 97.00      | 1,455.00   |
| 8   | 90102300*  | 1500 MM SMOOTH-LINED PIPE CULVERT CLASS A       | 72    | m     | 170.00     | 62,900.00 |            |        | 119.00     | 44,030.00  |
| 142 | 90102300*  | 1500 MM SMOOTH-LINED PIPE CULVERT CLASS A       | 72    | m     | 670.00     | 48,240.00 |            |        |            |            |
| 143 | 90105000*  | 375 MM REINFORCED CONCRETE PIPE CULVERT CLASS A | 37    | m     | 670.00     | 48,240.00 |            |        | 295.00     | 21,240.00  |
| 144 | 90105100*  | 450 MM REINFORCED CONCRETE PIPE CULVERT CLASS A | 35    | m     | 60.00      | 2,220.00  |            |        | 64.00      | 2,368.00   |
| 145 | 90105200*  | 600 MM REINFORCED CONCRETE PIPE CULVERT CLASS A | 205   | m     | 70.00      | 2,450.00  |            |        | 71.00      | 2,485.00   |
| 146 | 90105300*  | 900 MM REINFORCED CONCRETE PIPE CULVERT CLASS A | 205   | m     | 100.00     | 3,500.00  |            |        | 81.00      | 2,835.00   |
|     |            |   |       |       |            |           |            |        | 105.00     | 3,675.00   |
|     |            |   |       |       |            |           |            |        | 255.00     | 50,075.00  |

Utah Department of Transportation

Abstract of Bids

Project No: \*SP-15-6(31)270  
 Project Name: UNIVERSITY PARKWAY INTERCHANGE  
 Type of Construction: GRAD., DRAIN., STR., SURF., SIGN., LIGHT., SIGNAL, WETLANDS, MITIGATION & LAND.  
 Estimate Completion date on or before 10/30/2000

| No.  | Item No.                | Description   | Qty  | Unit | Engineer's Estimate |              |            | Bidder: |            |              | 06/13/2002   | Page 4 of 27 |
|------|-------------------------|---|------|------|---------------------|--------------|------------|---------|------------|--------------|--------------|--------------|
|      |                         |   |      |      | Unit Price          | Amount       | Unit Price | Amount  | Unit Price | Amount       |              |              |
|      | A                       |   |      |      |                     |              |            |         |            |              |              |              |
| 102  | 90100060*               | 900 MM CORRUGATED PIPE CULVERT CLASS A                              | 296  | m    | 110.00              | 32,560.00    |            |         |            |              |              |              |
| 103  | 90101400*               | 450 MM SMOOTH LINED PIPE CULVERT CLASS A                            | 152  | m    | 85.00               | 12,920.00    |            |         | 140.00     | 41,440.00    | 114.00       | 33,744.00    |
| 104  | 90101410*               | 750 MM SMOOTH LINED PIPE CULVERT CLASS A                            | 147  | m    | 132.00              | 19,404.00    |            |         | 80.00      | 12,160.00    | 70.00        | 10,640.00    |
| 105  | 90102290*               | 600 MM REINFORCED CONCRETE PIPE CULVERT CLASS A                     | 31   | m    | 120.00              | 3,720.00     |            |         | 101.00     | 14,847.00    | 101.00       | 14,847.00    |
| 106  | 90102300*               | 750 MM REINFORCED CONCRETE PIPE CULVERT CLASS A                     | 38   | m    | 132.00              | 5,016.00     |            |         | 100.00     | 3,100.00     | 87.00        | 2,697.00     |
| 107  | 90102320*               | 900 MM REINFORCED CONCRETE PIPE CULVERT CLASS A                     | 32   | m    | 142.00              | 4,544.00     |            |         | 110.00     | 4,180.00     | 113.00       | 4,294.00     |
| 108  | 90102330*               | 1050 MM REINFORCED CONCRETE PIPE CULVERT CLASS A                    | 186  | m    | 155.00              | 28,830.00    |            |         | 150.00     | 4,800.00     | 14.00        | 448.00       |
| 109  | 90104010*               | 1800 MM STRUCTURAL PLATE PIPE CULVERT CLASS A                       | 65   | m    | 300.00              | 19,500.00    |            |         | 180.00     | 33,480.00    | 214.00       | 39,804.00    |
| 110  | 905000050               | END SECTION 600 MM (DIAMETER)                                       | 5    | Each | 215.73              | 1,078.65     |            |         | 450.00     | 29,250.00    | 675.00       | 43,875.00    |
| 111  | 905000060               | END SECTION 750 MM (DIAMETER)                                       | 6    | Each | 332.10              | 1,992.60     |            |         | 200.00     | 1,000.00     |              |              |
| 112  | 905000070               | END SECTION 900 MM (DIAMETER)                                       | 4    | Each | 593.12              | 2,372.48     |            |         | 300.00     | 1,800.00     | 200.00       | 1,000.00     |
| 113  | 930000020               | MANHOLE SOLID COVER AND FRAME V-1702                                | 2    | Each | 241.54              | 483.08       |            |         | 400.00     | 1,600.00     | 300.00       | 1,800.00     |
| 114  | 930000050               | Solid Cover and Frame V-1705  | 11   | Each | 264.26              | 2,906.86     |            |         | 135.00     | 270.00       | 400.00       | 1,600.00     |
| 115  | 930000100               | Rectangular Grate and Frame (Bicycle-Safe Grating), Dwg. No. V-1703 | 47   | Each | 385.56              | 18,121.32    |            |         | 295.00     | 3,245.00     | 200.00       | 400.00       |
| 116  | 990000000*              | Core and Grout Connection   | 5    | Each | 500.00              | 2,500.00     |            |         | 300.00     | 14,100.00    | 350.00       | 16,450.00    |
| 117  | 991000000*              | 450 mm DUCTILE IRON PIPE  | 62   | m    | 100.00              | 6,200.00     |            |         | 1,100.00   | 5,500.00     | 500.00       | 2,500.00     |
|      |                         | Subtotal  |      |      |                     | 9,883,923.79 |            |         | 115.00     | 7,130.00     | 115.00       | 7,130.00     |
| 20 - | STRUCTURES DWG NO F-673 |   |      |      |                     |              |            |         |            | 7,654,293.47 |              |              |
| 118  | 202000100               | REMOVE BRIDGE   | 1    | Each | 60,000.00           | 60,000.00    |            |         |            |              |              |              |
| 119  | 220000050               | Granular Backfill Borrow  | 960  | m3   | 30.00               | 28,800.00    |            |         | 100,000.00 | 100,000.00   | 100,000.00   | 100,000.00   |
| 120  | 501000010               | Pile Driving Equipment  | 1    | Lump | 40,000.00           | 40,000.00    |            |         | 20.00      | 19,200.00    | 30.00        | 28,800.00    |
| 121  | 50200010*               | DRIVEN PILES 324 MM DIAMETER  | 5308 | m    | 90.00               | 477,720.00   |            |         | 75,000.00  | 75,000.00    | 390,000.00   | 390,000.00   |
| 122  | 506000002*              | STRUCTURAL CONCRETE (EST. QUANTITY 3037 M3)                         | 1    | Lump | 1,275,540.00        | 1,275,540.00 |            |         | 65.00      | 345,020.00   | 50.00        | 265,400.00   |
| 123  | 507000010*              | PRESTRESSED CONCRETE MEMBER -- (32,678 METERS TYPE VI) (SPECIALITY  | 46   | Each | 18,000.00           | 828,000.00   |            |         | 950,000.00 | 950,000.00   | 1,000,000.00 | 1,000,000.00 |
|      |                         |   |      |      |                     |              |            |         | 13,250.00  | 609,500.00   | 14,000.00    | 14,000.00    |

General Note 10  
 Rep Pipe 10



From: Boyd Wheeler  
To: Todd Jensen  
Date: 6/18/03 12:03PM  
Subject: Unit Costs

0001 Deputy Director of the Structures Division

Todd, Please find a summary of unit costs submitted to FHWA. These unit costs have factored out the misc. costs associated with the projects such as approach slabs, slope protection, fence etc. They have not been broken out by bridge type, but I could do that if you want. These are those bridges on the Federal-Aid system.

|                   |                 |  |
|-------------------|-----------------|--|
| 2000              | \$98/ sq ft     | $(144/0.0929 \text{ m}^2) = \$1055/\text{m}^2$ |
| 2001              | \$94/ sq ft     | $(144/0.0929 \text{ m}^2) = \$1015/\text{m}^2$ |
| 2002 without arch | \$72.66/ sq ft  |  |
| 2002 with arch    | \$136.44/ sq ft |  |

Please let me know if you need additional information.

Thanks  
Boyd

FOR DTRG alternatives include costs such for approach slabs, slope protection  
Costs for 2003 will not be available until end of year  
There were no bridges built in 2002 similar to the DTRG.

Use cost for structures w/ approach slabs & slope protection  
at \$1200/m<sup>2</sup>.

# General Note II Structure Costs

## Two Lane Bridge Value Comparison Chart

6/7/2002

SKH

| <u>ORIGINAL BID</u>     | Deck Area |    | Equals<br>Unit Price | Equals<br>Price |
|-------------------------|-----------|----|----------------------|-----------------|
| Shepard Overpass        | 1576 M2   | \$ | 1,087                | \$1,712,906     |
| North Bound Ramp        | 1285 M2   | \$ | 1,240                | \$1,593,301     |
| South Bound Ramp        | 826 M2    | \$ | 1,653                | \$1,365,958     |
| Cross Street Overpass   | 1629 M2   | \$ | 1,122                | \$1,827,835     |
| * STRUCTURES TOTAL..... | 5316 M2   | \$ | 1,223                | \$6,500,000     |

avg per m<sup>2</sup>

## PROPOSED PRICING

### Carry Over from Original Bid, with No Cross Street Bridge

|                  |         |    |       |             |
|------------------|---------|----|-------|-------------|
| Shepard Overpass | 1576 M2 | \$ | 1,087 | \$1,712,906 |
| North Bound Ramp | 1285 M2 | \$ | 1,240 | \$1,593,301 |
| South Bound Ramp | 826 M2  | \$ | 1,654 | \$1,365,958 |
| * SUBTOTAL.....  | 3687 M2 | \$ | 1,267 | \$4,672,165 |

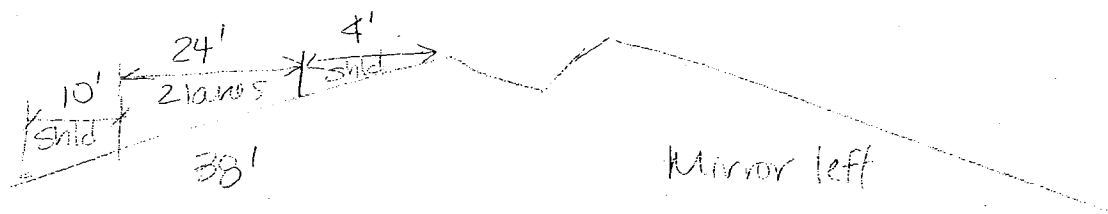
### Added Costs

|                                       |                          |    |           |             |
|---------------------------------------|--------------------------|----|-----------|-------------|
| Ready Mix Concrete.....               | 6908 (M2) <sup>1/3</sup> | \$ | 24        | \$167,000   |
| 50% Risk Change to SB Bridge .....    | -13% M2                  | \$ | 1,365,958 | -\$171,695  |
| Known Changes to NB Bridge.....       | 18% M2                   | \$ | 1,593,301 | \$283,522   |
| SUBTOTAL ADDED COSTS.....             |                          |    |           | \$278,827   |
| REVISED COMPLETE STRUCTURES COST..... |                          |    |           | \$4,950,992 |

avg per m<sup>2</sup>

# General Notes Structure Width

Pavement Width



$$= (38)(2) = 76 \text{ ft} \approx 22.2 \text{ m} = \text{pavement width}$$

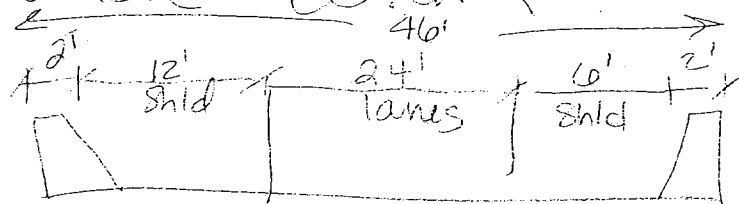
Use 23.0m

Trail Pavement

$$2.0 \text{ m} - \text{pd}$$

$$2.4 \text{ m equestrian} = 4.4 \text{ m}$$

Structure Width

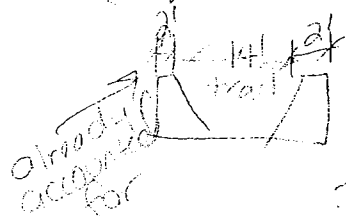


Use wider shoulder for structures

12' instead of 10'  
6' instead of 4'

46' one direction

$$(46)(2) = 92 \text{ ft}$$



⇒ 10 ft for trail

$$\text{Total structure width} = 92 + 16 = 108 \text{ ft}$$

≈  
33m

General Estimate

# General Notes 13114 System Interchange Info

Cost for System Interchange -

- earth - 0

2 ramps to/from I-15

4 ramps Redwood

1 ramp Redwood I-15

2 ramps leg I-215

2 slip ramps

4 ramps @ Redwood & Diamond \$2,305,000

2 ramps from I-15 =

length = 2500 m

clearance height for embankment is double

vs 16.1 m

Area for embankment =  $\frac{1}{2}(2500)(16.1) = 20,125 \text{ m}^2$

assume width = 8.5

Volume =  $A \cdot w = (20,125)(8.5) = 171,063 \text{ m}^3$

2 ramps =  $(171,063)(2) = 342,125 \text{ m}^3$

Cost =  $(342,125 \text{ m}^3)(\$8/\text{m}^3) = \underline{\underline{\$2,737,000}}$

Structure Area

I-15 to LP NB = width = 20 m  
length = 500 m = 10,000 m<sup>2</sup>

LP SB to I-15 = width = 20 m  
length = 500 m = 10,000 m<sup>2</sup>

Cost =  $(10,000 \text{ m}^2)(\$1200/\text{m}^2) = \underline{\underline{\$12,000,000}}$

2 ramps leg-215 → vs same as I-15 ramps

\$12,200,000 structure

diamond interchange

# Regional Estimates

## General Notes 13 System Interchange Info

2 slip ramps → like diamond ramps

$$\begin{array}{l}
 \$2,805,000 / 2 = \$1,402,500 \\
 \nearrow \\
 \text{uses 4 ramps}
 \end{array}$$

7 ramps (structures) Oil drain / Jordan River

approx 75 m long  
use 36 m width

$$\text{Area} = (75)(36) = 2,700 \text{ m}^2$$

$$7 \text{ structures} = (7)(2700) = 18,900 \text{ m}^2$$

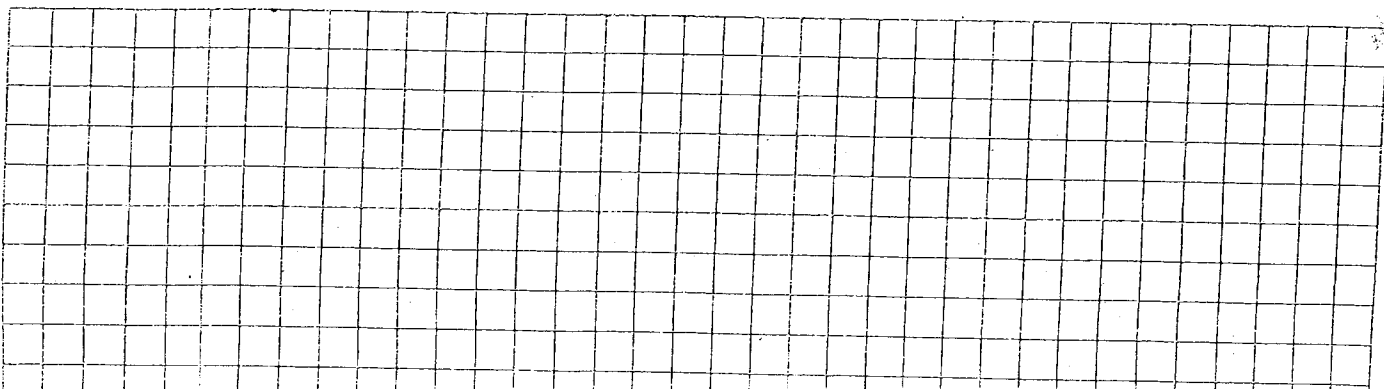
$$\text{Cost} = (18,900 \text{ m}^2)(\$1200/\text{m}^2) = \$22,680,000$$

$$\begin{array}{r}
 \text{Total Cost} \\
 = \$2,805,000 \\
 2,737,000 \\
 13,200,000 \\
 13,200,000 \\
 2,737,000 \\
 1,402,500 \\
 \hline
 22,680,000
 \end{array}$$

- \$58,761,500 for System

Old number used was \$40,000,000

use \$50,000,000 since rough estimate was very conservative



# General Notes 13 for System Interchange Info

System Interchange  
Using \$50,000,000

take 13% for earthwork costs

\$6,500,000

take 87% for structure costs

\$43,500,000

Earthwork quantity  $\Rightarrow \$6,500,000 / \$9/m^3 = 722,222 m^3$

Structure quantity  $\Rightarrow \$43,500,000 / \$1200/m^2 = 36,250 m^2$

2 Interchanges

$$(722,222)(2) = 1,444,444 m^3 \quad \{ \text{Earthwork} \}$$

$$(36,250)(2) = 72,500 m^2 \quad \{ \text{Structure} \}$$

# Regional Estimates

## General Note 15 Diamond Interch Info

### Cost for Diamond Interchange

Crossing street structure =  $1815 \text{ m}^2$

$$(1815 \text{ m}^2)(1200) = 2,178,000 \approx 2,200,000$$

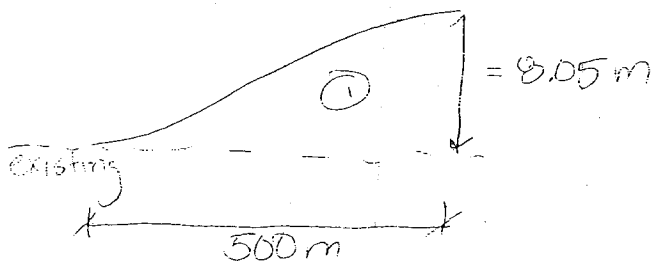
Earthwork (4 ramps)

Assume 500 m length for ramp

Ramp width

$$\frac{1.2}{4} + 4.3 + \frac{1.8}{4} + \frac{0.6}{4} = 8.5$$

Ramp profile



5.05 m UDOT required clearance  
3.0 m structure depth

$$\text{Area}_1 = \text{assume triangular} = \frac{1}{2}(500)(8.05) = 2,013 \text{ m}^2$$

$$\text{Volume} = A \times w = (2013 \text{ m}^2)(8.5 \text{ m}) = 17,111 \text{ m}^3$$

$$+ 10\% \text{ for side slopes} = 18,822 \text{ m}^3$$

$$4 \text{ ramps} = (18,822)(4) = 75,286 \text{ m}^3$$

$$\text{Earthwork cost } (\$8/\text{m}^3)(75,286 \text{ m}^3) = \$602,290$$

$$\begin{aligned} \text{Cost for diamond interchange} &= \$2,178,000 + \$603,000 \\ &= 2,781,000 \end{aligned}$$

# General Note 16 Catch Basin Info

| Typical CB            | Quantity | Av. Bid Price | Total          |
|-----------------------|----------|---------------|----------------|
| Conc. Small Structure | 1.5 m3   | \$840         | \$1,260        |
| Rein. Steel           | 113 kg   | \$1.5         | \$170          |
| Standard Grate        | 1 each   | \$370         | \$370          |
|                       |          |               | <i>\$1,800</i> |



# General Note 17 Striping Cost

## TABULATION OF BIDS

Schedule: A  
Project No.: AZ HPP 93(1)  
Project Name: HOOVER DAM BYPASS, ARIZONA APPROACH

| Item No.  | Item Unit | Item Description                    | Quantity | Unit Price | Amount     |
|-----------|-----------|-------------------------------------|----------|------------|------------|
|           |           | FANN CONTRACTING, INC.              |          | 425.00     | 5,100.00   |
|           |           | GRANITE CONSTRUCTION COMPANY        |          | 360.00     | 4,320.00   |
|           |           | YAEGER SHANSKA, INC.                |          | 420.00     | 5,040.00   |
|           |           | INTERNATIONAL BRIDGE CORPORATION    |          | 400.00     | 4,800.00   |
|           |           | ENGINEER'S ESTIMATE                 |          | 300.00     | 3,600.00   |
| <hr/>     |           |                                     |          |            |            |
| * 63401HA | LNFT      | PAVEMENT MARKINGS, TYPE H, SOLID    |          |            |            |
|           |           | R.E. MONKS CONSTRUCTION COMPANY, LL | 45,700   | 0.30       | 13,710.00  |
|           |           | HARPER CONTRACTING, INC.            |          | 0.23       | 10,511.00  |
|           |           | LAS VEGAS PAVING CORPORATION        |          | 0.31       | 14,167.00  |
|           |           | AMES CONSTRUCTION, INC.             |          | 0.25       | 11,425.00  |
|           |           | EDWARD KRAEMER & SONS, INC.         |          | 0.21       | 9,597.00   |
|           |           | FREHNER CONSTRUCTION COMPANY, INC.  |          | 0.25       | 11,425.00  |
|           |           | AMERICAN ASPHALT & GRADING, COMPANY |          | 0.30       | 13,710.00  |
|           |           | LADD-MYERS, A JOINT VENTURE         |          | 0.25       | 11,425.00  |
|           |           | WASHINGTON GROUP INTERNATIONAL      |          | 1.00       | 45,700.00  |
|           |           | FANN CONTRACTING, INC.              |          | 0.75       | 34,275.00  |
|           |           | GRANITE CONSTRUCTION COMPANY        |          | 0.25       | 11,425.00  |
|           |           | YAEGER SHANSKA, INC.                |          | 0.25       | 11,425.00  |
|           |           | INTERNATIONAL BRIDGE CORPORATION    |          | 6.50       | 297,050.00 |
|           |           | ENGINEER'S ESTIMATE                 |          | 0.80       | 36,560.00  |
| <hr/>     |           |                                     |          |            |            |
| 63405     | EACH      | RAISED PAVEMENT MARKERS             |          |            |            |
|           |           | R.E. MONKS CONSTRUCTION COMPANY, LL | 117      | 8.00       | 936.00     |
|           |           | HARPER CONTRACTING, INC.            |          | 4.86       | 568.62     |
|           |           | LAS VEGAS PAVING CORPORATION        |          | 3.00       | 351.00     |
|           |           | AMES CONSTRUCTION, INC.             |          | 3.00       | 351.00     |
|           |           | EDWARD KRAEMER & SONS, INC.         |          | 4.50       | 526.50     |
|           |           | FREHNER CONSTRUCTION COMPANY, INC.  |          | 27.00      | 3,159.00   |
|           |           | AMERICAN ASPHALT & GRADING, COMPANY |          | 2.85       | 333.45     |
|           |           | LADD-MYERS, A JOINT VENTURE         |          | 5.00       | 585.00     |
|           |           | WASHINGTON GROUP INTERNATIONAL      |          | 5.00       | 585.00     |
|           |           | FANN CONTRACTING, INC.              |          | 6.00       | 702.00     |
|           |           | GRANITE CONSTRUCTION COMPANY        |          | 5.00       | 585.00     |
|           |           | YAEGER SHANSKA, INC.                |          | 3.00       | 351.00     |
|           |           | INTERNATIONAL BRIDGE CORPORATION    |          | 12.50      | 1,462.50   |
|           |           | ENGINEER'S ESTIMATE                 |          | 6.00       | 702.00     |
| <hr/>     |           |                                     |          |            |            |
| 63409A    | LNFT      | MILLED RUMBLE STRIP                 |          |            |            |
|           |           | R.E. MONKS CONSTRUCTION COMPANY, LL | 13,000   | 1.00       | 13,000.00  |
|           |           | HARPER CONTRACTING, INC.            |          | 0.22       | 2,860.00   |
|           |           | LAS VEGAS PAVING CORPORATION        |          | 0.50       | 6,500.00   |
|           |           | AMES CONSTRUCTION, INC.             |          | 0.30       | 3,900.00   |
|           |           | EDWARD KRAEMER & SONS, INC.         |          | 15.00      | 195,000.00 |
|           |           | FREHNER CONSTRUCTION COMPANY, INC.  |          | 0.50       | 6,500.00   |

$$\frac{0.83}{ft} \left( \frac{3.28 ft}{1m} \right) = 2.73/m$$

General Note 17  
Striping Cost

| Utah Department of Transportation<br>Abstract of Bids |           |  |       | Engineer's Estimate |            | Bidder:<br>GENEVA ROCK PRODUCTS INC<br>302 WEST 5400 SOUTH #201<br>MURRAY, UT 84107 |            | 01/16/2003 | Page 2 of 2 |
|---|-----------|--|-------|---------------------|------------|---|------------|------------|-------------|
| No.   | Item No.  | Description                              | Qty   | Unit                | Unit Price | Amount  | Unit Price | Amount     | Amount      |
| <b>10 - ROADWAY</b>                                   |           |  |       |                     |            |   |            |            |             |
| 1   | 012850010 | Mobilization                             |       |                     |            |   |            |            |             |
| 2   | 013150010 | Public Information Services              | 1     | Lump                | 40,000.00  | 40,000.00   | 40,000.00  | 40,000.00  |             |
| 3   | 015540005 | Traffic Control                          | 1     | Lump                | 5,000.00   | 5,000.00  | 2,999.50   | 2,999.50   |             |
| 4   | 01557000* | Maintenance of Traffic                   | 1     | Lump                | 35,000.00  | 35,000.00   | 45,000.00  | 45,000.00  |             |
| 5   | 027210070 | Untreated Base Course 3/4 inch or 1 inch | 1     | Lump                | 10,000.00  | 10,000.00   | 30,000.00  | 30,000.00  |             |
|   |           | Max                                      | 7121  | Ton                 | 15.00      | 106,815.00  | 20.00      | 142,420.00 |             |
| 6   | 027410050 | HMA - 1/2 inch                           |       |                     |            |   |            |            |             |
| 7   | 027480040 | Emulsified Asphalt CSS-1                 | 7960  | Ton                 | 35.00      | 278,600.00  | 70.00      | 557,200.00 |             |
| 8   | 027650060 | Pavement Marking Paint                   | 30    | Ton                 | 275.00     | 8,250.00  | 606.00     | 18,180.00  |             |
| 9   | 028420010 | Delineator Type I                        | 85275 | ft                  | 0.25       | 21,318.75   | 0.06       | 5,116.50   |             |
|   |           |  | 140   | Each                | 25.00      | 3,500.00  | 43.45      | 6,083.00   |             |
|   |           | Subtotal                                 |       |                     |            | 508,483.75  |            | 846,999.00 |             |
|   |           | Total:                                   |       |                     |            | 508,483.75  |            | 846,999.00 |             |
|   |           | Percent of Engineer's Estimate:          |       |                     |            |   |            | 166.57 %   |             |

$$\frac{0.25}{ft} \left( \frac{3.28 ft}{1 m} \right) = 0.82/m$$

# Utah Department of Transportation

CSI - METRIC

## Statewide Standard Item Average Prices and Total Quantities

General Note 20  
Fencing Cost

| Item Number | Description                                | UOM  | Avg Unit Price | Total Qty | Last Year Avgd |
|-------------|--|------|----------------|-----------|----------------|
| 027860030   | Asphalt Cement PG 70-28                    | Mg   | \$275.00       | 300       | 2002           |
| 027860040   | Asphalt Cement PG 70-34                    | Mg   | \$0.00         |           |                |
| 027860050   | Asphalt Cement PG 64-28                    | Mg   | \$108.86       | 1,227     | 2002           |
| 028120010   | Pressurized Irrigation System              | Lump | \$30,399.31    | 8         | 2002           |
| 02812002D   | PVC Pipe Schedule                          | m    | \$0.00         |           |                |
| 028210002   | 0.9 m Chain Link Fence, Type I             | m    | \$0.00         |           |                |
| 028210004   | 1.2 m Chain Link Fence, Type I             | m    | \$0.00         |           |                |
| 028210006   | 1.5 m Chain Link Fence, Type I             | m    | \$0.00         |           |                |
| 028210008   | 1.8 m Chain Link Fence, Type I             | m    | \$0.00         |           |                |
| 028210010   | 2.2 m Chain Link Fence, Type I             | m    | \$36.18        | 1,379     | 2001           |
| 028210012   | 0.9 m Chain Link Fence, Type II            | m    | \$68.56        | 17        | 2001           |
| 028210014   | 1.2 m Chain Link Fence, Type II            | m    | \$26.00        | 6         | 2001           |
| 028210016   | 1.5 m Chain Link Fence, Type II            | m    | \$60.19        | 125       | 2001           |
| 028210018   | 1.8 m Chain Link Fence, Type II            | m    | \$44.00        | 14        | 2001           |
| 028210020   | 2.2 m Chain Link Fence, Type II            | m    | \$34.61        | 444       | 2001           |
| 028210022   | 0.9 m Chain Link Fence, Type III           | m    | \$0.00         |           |                |
| 028210024   | 1.2 m Chain Link Fence, Type III           | m    | \$0.00         |           |                |
| 028210026   | 1.5 m Chain Link Fence, Type III           | m    | \$23.83        | 132       | 2001           |
| 028210028   | 1.8 m Chain Link Fence, Type III           | m    | \$82.00        | 26        | 2002           |
| 028210030   | 2.2 m Chain Link Fence, Type III           | m    | \$34.97        | 115       | 2002           |
| 028210032   | 0.9 m Chain Link Fence, Type IV            | m    | \$97.02        | 31        | 2001           |
| 028210034   | 1.2 m Chain Link Fence, Type IV            | m    | \$0.00         |           |                |
| 028210036   | 1.5 m Chain Link Fence, Type IV            | m    | \$0.00         |           |                |
| 028210038   | 1.8 m Chain Link Fence, Type IV            | m    | \$0.00         |           |                |
| 028210040   | 2.2 m Chain Link Fence, Type IV            | m    | \$25.00        | 360       | 2002           |
| 028210042   | Chain Link Fence Type I with Barb Wire Arm | m    | \$22.00        | 90        | 2001           |
| 028210044   | Chain Link Brace Post                      | m    | \$37.00        | 80        | 2001           |
| 028210046   | Chain Link Gate H- 0.9 m X W- 1.2 m        | Each | \$110.59       | 75        | 2002           |
| 028210048   | Chain Link Gate H- 1.2 m X W- 1.2 m        | Each | \$0.00         |           |                |
| 028210050   | Chain Link Gate H- 1.5 m X W- 1.2 m        | Each | \$315.00       | 8         | 2001           |
| 028210052   | Chain Link Gate H- 1.8 m X W- 1.2 m        | Each | \$0.00         |           |                |
| 028210054   | Chain Link Gate H- 0.9 m X W- 1.8 m        | Each | \$265.00       | 1         | 2001           |
| 028210056   | Chain Link Gate H- 1.2 m X W- 1.8 m        | Each | \$0.00         |           |                |
| 028210058   | Chain Link Gate H- 1.5 m X W- 1.8 m        | Each | \$0.00         |           |                |
| 028210060   | Chain Link Gate H- 1.8 m X W- 1.8 m        | Each | \$0.00         |           |                |
| 028210062   | Chain Link Gate H- 0.9 m X W- 2.4 m        | Each | \$0.00         |           |                |
| 028210064   | Chain Link Gate H- 1.2 m X W- 2.4 m        | Each | \$0.00         |           |                |
| 028210066   | Chain Link Gate H- 1.5 m X W- 2.4 m        | Each | \$0.00         |           |                |
| 028210068   | Chain Link Gate H- 1.8 m X W- 2.4 m        | Each | \$175.00       | 2         | 2001           |
| 028210070   | Chain Link Gate H- 0.9 m X W- 3.0 m        | Each | \$397.73       | 11        | 2001           |
| 028210072   | Chain Link Gate H- 1.2 m X W- 3.0 m        | Each | \$0.00         |           |                |
| 028210074   | Chain Link Gate H- 1.5 m X W- 3.0 m        | Each | \$565.00       | 10        | 2001           |
| 028210076   | Chain Link Gate H- 1.8 m X W- 3.0 m        | Each | \$0.00         |           |                |
| 028210078   | Chain Link Gate H- 0.9 m X W- 3.6 m        | Each | \$388.25       | 16        | 2001           |
| 028210080   | Chain Link Gate H- 1.2 m X W- 3.6 m        | Each | \$0.00         |           |                |
| 028210082   | Chain Link Gate H- 1.5 m X W- 3.6 m        | Each | \$0.00         |           |                |
| 028210084   | Chain Link Gate H- 1.8 m X W- 3.6 m        | Each | \$0.00         |           |                |
| 028210086   | Chain Link Gate H- 0.9 m X W- 4.3 m        | Each | \$330.00       | 2         | 2001           |
| 028210088   | Chain Link Gate H- 1.2 m X W- 4.3 m        | Each | \$0.00         |           |                |
| 028210090   | Chain Link Gate H- 1.5 m X W- 4.3 m        | Each | \$0.00         |           |                |
| 028210092   | Chain Link Gate H- 1.8 m X W- 4.3 m        | Each | \$0.00         |           |                |
| 028210094   | Chain Link Gate H- 0.9 m X W- 4.9 m        | Each | \$500.67       | 3         | 2001           |
| 028210096   | Chain Link Gate H- 1.2 m X W- 4.9 m        | Each | \$0.00         |           |                |
| 028210098   | Chain Link Gate H- 1.5 m X W- 4.9 m        | Each | \$0.00         |           |                |
| 028210100   | Chain Link Gate H- 1.8 m X W- 4.9 m        | Each | \$0.00         |           |                |
| 028220005   | Right-of-Way Fence, Type A (Wood Post)     | m    | \$627.50       | 4         | 2001           |
| 028220010   | Right-of-Way Fence, Type A (Metal Post)    | m    | \$8.75         | 71        | 2002           |
| 028220015   | Right-of-Way Fence, Type B (Wood Post)     | m    | \$8.11         | 1,831     | 2002           |
| 028220020   | Right-of-Way Fence, Type B (Metal Post)    | m    | \$9.80         | 85        | 2002           |
|             |  | m    | \$7.80         | 931       | 2002           |

General Note 20  
Fencing Cost

# Utah Department of Transportation

CSI - INCH/POUND

## Statewide Standard Item Average Prices and Total Quantities

| Item Number | Description                                 | UOM  | Avg Unit Price | Total Qty | Last Year Avgd |
|-------------|---|------|----------------|-----------|----------------|
| 027850060   | Emulsified Asphalt LMCRS-2                  | Ton  | \$ .00         |           |                |
| 027850065   | Emulsified Asphalt HFRS-2P                  | Ton  | \$275.00       | 240       | 2003           |
| 027850070   | Emulsified Asphalt HFMS-2                   | Ton  | \$ .00         |           |                |
| 027850075   | Emulsified Asphalt HFMS-2P                  | Ton  | \$ .00         |           |                |
| 027860010   | Open Graded Surface Course                  | Ton  | \$25.00        | 2,600     | 2003           |
| 027860020   | Asphalt Cement PG 64-34                     | Ton  | \$265.00       | 160       | 2003           |
| 027860030   | Asphalt Cement PG 70-28                     | Ton  | \$ .00         |           |                |
| 027860040   | Asphalt Cement PG 70-34                     | Ton  | \$ .00         |           |                |
| 027860050   | Asphalt Cement PG 64-28                     | Ton  | \$ .00         |           |                |
| 028120010   | Pressurized Irrigation System               | Ton  | \$286.98       | 1,005     | 2002           |
| 028120020   | ____ inch PVC Pipe Schedule ____            | Lump | \$33,333.33    | 3         | 2002           |
| 028210002   | 3 ft Chain Link Fence, Type I               | ft   | \$ .00         |           |                |
| 028210004   | 4 ft Chain Link Fence, Type I               | ft   | \$ .00         |           |                |
| 028210006   | 5 ft Chain Link Fence, Type I               | ft   | \$ .00         |           |                |
| 028210008   | 6 ft Chain Link Fence, Type I               | ft   | \$ .00         |           |                |
| 028210010   | 7 ft Chain Link Fence, Type I               | ft   | \$ .00         |           |                |
| 028210012   | 3 ft Chain Link Fence, Type II              | ft   | \$ .00         |           |                |
| 028210014   | 4 ft Chain Link Fence, Type II              | ft   | \$ .00         |           |                |
| 028210016   | 5 ft Chain Link Fence, Type II              | ft   | \$12.00        | 81        | 2003           |
| 028210018   | 6 ft Chain Link Fence, Type II              | ft   | \$ .00         |           |                |
| 028210020   | 7 ft Chain Link Fence, Type II              | ft   | \$6.00         | 190       | 2002           |
| 028210022   | 3 ft Chain Link Fence, Type III             | ft   | \$ .00         |           |                |
| 028210024   | 4 ft Chain Link Fence, Type III             | ft   | \$ .00         |           |                |
| 028210026   | 5 ft Chain Link Fence, Type III             | ft   | \$25.00        | 20        | 2002           |
| 028210028   | 6 ft Chain Link Fence, Type III             | ft   | \$ .00         |           |                |
| 028210030   | 7 ft Chain Link Fence, Type III             | ft   | \$ .00         |           |                |
| 028210032   | 3 ft Chain Link Fence, Type IV              | ft   | \$ .00         |           |                |
| 028210034   | 4 ft Chain Link Fence, Type IV              | ft   | \$ .00         |           |                |
| 028210036   | 5 ft Chain Link Fence, Type IV              | ft   | \$ .00         |           |                |
| 028210038   | 6 ft Chain Link Fence, Type IV              | ft   | \$ .00         |           |                |
| 028210040   | 7 ft Chain Link Fence, Type IV              | ft   | \$30.00        | 70        | 2002           |
| 028210042   | Chain Link Fence, Type I with Barb Wire Arm | ft   | \$ .00         |           |                |
| 028210044   | Chain Link Brace Post                       | ft   | \$ .00         |           |                |
| 028210046   | Chain Link Gate, H= 3 ft X W= 4 ft          | Each | \$77.00        | 10        | 2003           |
| 028210048   | Chain Link Gate, H= 4 ft X W= 4 ft          | Each | \$ .00         |           |                |
| 028210050   | Chain Link Gate, H= 5 ft X W= 4 ft          | Each | \$ .00         |           |                |
| 028210052   | Chain Link Gate, H= 6 ft X W= 4 ft          | Each | \$ .00         |           |                |
| 028210054   | Chain Link Gate, H= 3 ft X W= 6 ft          | Each | \$ .00         |           |                |
| 028210056   | Chain Link Gate, H= 4 ft X W= 6 ft          | Each | \$ .00         |           |                |
| 028210058   | Chain Link Gate, H= 5 ft X W= 6 ft          | Each | \$ .00         |           |                |
| 028210060   | Chain Link Gate, H= 6 ft X W= 6 ft          | Each | \$ .00         |           |                |
| 028210062   | Chain Link Gate, H= 3 ft X W= 8 ft          | Each | \$ .00         |           |                |
| 028210064   | Chain Link Gate, H= 4 ft X W= 8 ft          | Each | \$ .00         |           |                |
| 028210066   | Chain Link Gate, H= 5 ft X W= 8 ft          | Each | \$ .00         |           |                |
| 028210068   | Chain Link Gate, H= 6 ft X W= 8 ft          | Each | \$ .00         |           |                |
| 028210070   | Chain Link Gate, H= 3 ft X W= 10 ft         | Each | \$ .00         |           |                |
| 028210072   | Chain Link Gate, H= 4 ft X W= 10 ft         | Each | \$ .00         |           |                |
| 028210074   | Chain Link Gate, H= 5 ft X W= 10 ft         | Each | \$ .00         |           |                |
| 028210076   | Chain Link Gate, H= 6 ft X W= 10 ft         | Each | \$ .00         |           |                |
| 028210078   | Chain Link Gate, H= 3 ft X W= 12 ft         | Each | \$ .00         |           |                |
| 028210080   | Chain Link Gate, H= 4 ft X W= 12 ft         | Each | \$ .00         |           |                |
| 028210082   | Chain Link Gate, H= 5 ft X W= 12 ft         | Each | \$ .00         |           |                |
| 028210084   | Chain Link Gate, H= 6 ft X W= 12 ft         | Each | \$ .00         |           |                |
| 028210086   | Chain Link Gate, H= 3 ft X W= 14 ft         | Each | \$ .00         |           |                |
| 028210088   | Chain Link Gate, H= 4 ft X W= 14 ft         | Each | \$ .00         |           |                |
| 028210090   | Chain Link Gate, H= 5 ft X W= 14 ft         | Each | \$ .00         |           |                |
| 028210092   | Chain Link Gate, H= 6 ft X W= 14 ft         | Each | \$ .00         |           |                |
| 028210094   | Chain Link Gate, H= 3 ft X W= 16 ft         | Each | \$ .00         |           |                |
| 028210096   | Chain Link Gate, H= 4 ft X W= 16 ft         | Each | \$ .00         |           |                |

$$6.00/\text{ft} (3.28\text{ft}/\text{m}) = \$19.68/\text{m}$$

$$30.00/\text{ft} (3.28\text{ft}/\text{m}) = \$98.40/\text{m}$$

Utah Department of Transportation  
Abstract of Bids

Project No: STP-0071(11)10  
Project Name: 900 EAST 6000 SOUTH TO 6300 SOUTH  
Type of Construction: MINOR WIDENING  
Estimate Completion date on or before 08/01/2003  
County: SALT LAKE (35)

Page 5 of 6

04/25/2003

Bidder:  
GRANITE CONSTRUCTION CO  
OF UT  
1000 N. WARM SPRINGS ROAD  
P.O. BOX 30429 - 84130  
SALT LAKE CITY, UT 84116

Engineer's Estimate

| No. | Item No.  | Description                                | Qty   | Unit     | Unit Price | Amount     | Unit Price | Amount     | Unit Price | Amount |
|-----|-----------|--|-------|----------|------------|------------|------------|------------|------------|--------|
|     |           | Max  |       |          |            |            |            |            |            |        |
| 34  | 027410060 | HMA - 3/4 inch                             | 1475  | Ton      | 40.00      | 59,000.00  |            |            |            |        |
| 35  | 027480010 | Liquid Asphalt MC-70 or MC-250             | 3     | Ton      | 300.00     | 900.00     | 33.00      | 48,675.00  |            |        |
| 36  | 027480040 | Emulsified Asphalt CSS-1                   | 12    | Ton      | 275.00     | 3,300.00   | 1.00       | 3.00       |            |        |
| 37  | 02749001* | HMA - Driveways 1/2 inch                   | 128   | Ton      | 75.00      | 9,600.00   | 1.00       | 12.00      |            |        |
| 38  | 027680005 | 4 inch Pavement Marking Tape - White       | 5078  | ft       | 2.00       | 10,156.00  | 75.00      | 9,600.00   |            |        |
| 39  | 027680010 | 8 inch Pavement Marking Tape - White       | 88    | ft       | 4.00       | 352.00     | 1.67       | 8,480.26   |            |        |
| 40  | 027680015 | 4 inch Pavement Marking Tape - Yellow      | 5084  | ft       | 2.00       | 10,168.00  | 3.25       | 286.00     |            |        |
| 41  | 027680025 | Pavement Message (Tape)                    | 22    | Each     | 125.00     | 2,750.00   | 1.75       | 8,897.00   |            |        |
| 42  | 027710025 | Concrete Curb and Gutter Type B1           | 1054  | ft       | 10.00      | 10,540.00  | 135.00     | 2,970.00   |            |        |
| 43  | 027710040 | Concrete Driveway Flared, 6 inch Thick     | 1848  | sq ft    | 3.00       | 5,544.00   | 9.00       | 9,486.00   |            |        |
| 44  | 027710045 | Concrete Driveway Flared, 7 inch Thick     | 653   | sq ft    | 3.20       | 2,089.60   | 2.75       | 5,082.00   |            |        |
| 45  | 027760010 | Concrete Sidewalk                          | 5584  | sq ft    | 2.50       | 13,960.00  | 3.00       | 1,959.00   |            |        |
| 46  | 027760030 | Concrete Flatwork 4 inch thick             | 894   | sq ft    | 2.00       | 1,788.00   | 2.00       | 11,168.00  |            |        |
| 47  | 02776070* | Concrete Park Strip (patterned) 4 in Thick | 3595  | sq ft    | 3.00       | 10,785.00  | 1.80       | 1,609.20   |            |        |
| 48  | 027860010 | Open Graded Surface Course                 | 875   | Ton      | 28.00      | 24,500.00  | 4.50       | 16,177.50  |            |        |
| 49  | 027860050 | Asphalt Cement PG 64-28                    | 54    | Ton      | 265.00     | 14,310.00  | 34.00      | 29,750.00  |            |        |
| 50  | 02813000* | Relocate Sprinkler System                  | 1     | Lump     | 500.00     | 500.00     | 310.00     | 16,740.00  |            |        |
| 51  | 02817000* | Reconstruct Existing Fence                 | 90    | ft       | 5.00       | 450.00     | 5,000.00   | 5,000.00   |            |        |
| 52  | 028210014 | 4 ft Chain Link Fence, Type II             | 197   | ft       | 8.00       | 1,576.00   | 17.50      | 1,575.00   |            |        |
| 53  | 028210018 | 6 ft Chain Link Fence, Type II             | 227   | ft       | 8.00       | 1,816.00   | 8.00       | 1,576.00   |            |        |
| 54  | 02821002* | 6 ft Chain Link Fence, 2-Rail              | 101   | ft       | 10.00      | 1,010.00   | 9.00       | 2,043.00   |            |        |
| 55  | 028210044 | Chain Link Brace Post                      | 12    | Each     | 115.00     | 1,380.00   | 11.00      | 1,111.00   |            |        |
| 56  | 028210048 | Chain Link Gate, H= 4 ft X W= 4 ft         | 2     | Each     | 220.00     | 440.00     | 110.00     | 1,320.00   |            |        |
| 57  | 02821005* | Relocate Gate                              | 1     | Each     | 325.00     | 325.00     | 200.00     | 400.00     |            |        |
| 58  | 02826001* | Temporary Fence                            | 564   | ft       | 2.00       | 1,128.00   | 350.00     | 350.00     |            |        |
| 59  | 028960010 | Boundary Survey and Survey Plat            | 1     | Lump     | 5,000.00   | 5,000.00   | 2.50       | 1,410.00   |            |        |
| 60  | 029120010 | Contractor Furnished Topsoil               | 595   | sq yd    | 3.00       | 1,785.00   | 2,600.00   | 2,600.00   |            |        |
| 61  | 029220040 | Broadcast Seed                             | 5     | 1000sqft | 40.00      | 200.00     | 3.50       | 2,082.50   |            |        |
| 62  | 029220060 | Turf Sod                                   | 2798  | sq ft    | 0.60       | 1,678.80   | 100.00     | 500.00     |            |        |
| 63  | 029320030 | Plant - No. 1 Container                    | 60    | Each     | 12.90      | 774.00     | 0.60       | 1,678.80   |            |        |
| 64  | 029610030 | Rotomilling - 2 inch                       | 14260 | sq yd    | 1.00       | 14,260.00  | 14.00      | 840.00     |            |        |
| 65  | 032110010 | Reinforcing Steel - Coated                 | 552   | lb       | 0.75       | 414.00     | 0.70       | 9,982.00   |            |        |
| 66  | 033100020 | Concrete - Small Structure                 | 4     | cu yd    | 550.00     | 2,200.00   | 1.25       | 690.00     |            |        |
| 67  | 03312001* | Irrigation Diversion Box                   | 8     | Each     | 1,760.00   | 14,080.00  | 1,500.00   | 6,000.00   |            |        |
| 68  | 03313000* | Concrete Slueway                           | 2     | Each     | 1,200.00   | 2,400.00   | 3,400.00   | 27,200.00  |            |        |
|     |           | Subtotal                                   |       |          |            | 486,562.25 | 1,000.00   | 2,000.00   |            |        |
|     |           |  |       |          |            |            |            | 575,000.00 |            |        |

General Note 20  
Fencing Cost

### Traffic Control costs

A single diamond interchange example is provided. Traffic Control was a lump sum of \$1,400,000. This project would require traffic control at 2 system to system interchanges and detours associated with each interchange. Estimate uses \$5,000,000 for entire project. This does not include Railroad flagging which would cause a 10% increase in the cost. The railroad alternatives go through highly developed areas, therefore an additional 10% increase is needed. This will cover costs associated w/ detours & maintaining existing traffic.

Abstract of Bids

Project No: \*SP-15-6(31)270  
 Project Name: UNIVERSITY PARKWAY INTERCHANGE  
 Type of Construction: GRAD., DRAIN., STR., SURF., SIGN., LIGHT., SIGNAL, WETLANDS, MITIGATION & LAND.  
 Estimate Completion date on or before 10/30/2000

| No. | Item No.     | Description                             | Qty    | Unit | Unit Price   | Amount       | Unit Price | Amount       | Unit Price | Amount       |
|-----|--------------|---|--------|------|--------------|--------------|------------|--------------|------------|--------------|
|     | 10 - ROADWAY |   |        |      |              |              |            |              |            |              |
| 1   | 151000010    | MOBILIZATION                            |        |      |              |              |            |              |            |              |
| 2   | 155000010    | TRAFFIC CONTROL                         | 1      | Lump | 2,000,000.00 | 2,000,000.00 | 850,000.00 | 850,000.00   | 650,000.00 | 650,000.00   |
| 3   | 160000010    | BOUNDARY SURVEY AND SURVEY PLAT         | 1      | Lump | 1,400,000.00 | 1,400,000.00 | 800,000.00 | 800,000.00   | 500,000.00 | 500,000.00   |
| 4   | 160000003*   | CENTERLINE MONUMENT WITH RING AND COVER | 12     | Each | 7,700.00     | 7,700.00     | 3,000.00   | 3,000.00     | 4,250.00   | 4,250.00     |
| 5   | 160000004*   | SECTION CORNER WITH RING AND COVER      | 1      | Each | 225.00       | 2,700.00     | 300.00     | 3,600.00     | 400.00     | 4,800.00     |
| 6   | 161000000*   | SURVEY                                  | 1      | Each | 250.00       | 250.00       | 300.00     | 300.00       |            |              |
| 7   | 201000010    | Clear And Grub                          | 1      | Lump | 250,000.00   | 250,000.00   | 60,000.00  | 60,000.00    | 750.00     | 750.00       |
| 8   | 202000040    | Remove Concrete Sidewalk                | 1      | Lump | 56,000.00    | 56,000.00    | 100,000.00 | 100,000.00   | 102,574.00 | 102,574.00   |
| 9   | 202000070    | Remove Concrete Curb And Gutter         | 180    | m2   | 7.38         | 1,328.40     | 5.00       | 900.00       | 100,000.00 | 100,000.00   |
| 10  | 202000090    | Remove Raised Island                    | 280    | m    | 10.46        | 2,928.80     | 8.00       | 2,240.00     | 2.22       | 399.60       |
| 11  | 202000130    | REMOVE CATCH BASIN                      | 180    | m    | 46.89        | 8,440.20     | 8.00       | 1,440.00     | 6.00       | 1,680.00     |
| 12  | 202000170    | Remove Guardrail                        | 11     | Each | 350.00       | 3,850.00     | 850.00     | 9,350.00     | 3.00       | 540.00       |
| 13  | 202000180    | Remove Fence                            | 880    | m    | 7.49         | 6,591.20     | 4.00       | 3,520.00     | 250.00     | 2,750.00     |
| 14  | 202000240    | Remove Pipe Culvert                     | 2390   | m    | 3.07         | 7,337.30     | 3.00       | 7,170.00     | 3.80       | 3,344.00     |
| 15  | 202000030*   | REMOVE GATE                             | 380    | m    | 31.75        | 12,065.00    | 36.00      | 13,680.00    | 6.57       | 15,702.30    |
| 16  | 202000031*   | REMOVE SIGNAL POLE                      | 2      | Each | 100.00       | 200.00       | 100.00     | 200.00       | 30.00      | 11,400.00    |
| 17  | 202000040*   | REMOVE PRECAST CONCRETE BARRIER         | 7      | Each | 500.00       | 3,500.00     | 550.00     | 3,850.00     | 125.00     | 250.00       |
| 18  | 202000050*   | REMOVE TRAFFIC CONTROL CABLE            | 140    | m    | 50.00        | 7,000.00     | 6.00       | 840.00       | 500.00     | 3,500.00     |
| 19  | 202000060*   | REMOVE ATTENUATOR (SAND BARREL ARRAY)   | 140    | m    | 15.00        | 2,100.00     | 3.00       | 420.00       | 12.00      | 1,680.00     |
| 20  | 202000070*   | REMOVE COMMUNICATION LINE AND POLE      | 2      | Each | 500.00       | 1,000.00     | 350.00     | 700.00       | 5.75       | 805.00       |
| 21  | 202000080*   | REMOVE SIGNAL CABINET                   | 1180   | m    | 5.00         | 5,900.00     |            |              | 500.00     | 1,000.00     |
| 22  | 202000090*   | REMOVE SMALL CONCRETE STRUCTURE         | 2      | Each | 500.00       | 1,000.00     | 6.00       | 7,080.00     |            |              |
| 23  | 204000010    | Dust Control and Watering               | 1      | Each | 2,000.00     | 2,000.00     | 200.00     | 400.00       | 6.00       | 7,080.00     |
| 24  | 210000010    | Roadway Excavation                      | 62000  | kL   | 4.19         | 259,780.00   | 1,000.00   | 1,000.00     | 200.00     | 400.00       |
| 25  | 220000010    | Borrow                                  | 45000  | m3   | 5.75         | 258,750.00   | 4.10       | 254,200.00   | 350.00     | 350.00       |
| 26  | 220000030    | Granular Borrow                         | 117000 | m3   | 7.79         | 911,430.00   | 5.25       | 236,250.00   | 3.00       | 186,000.00   |
| 27  | 222000010    | Embankment for Bridge                   | 47000  | m3   | 14.80        | 695,600.00   | 9.00       | 1,053,000.00 | 8.00       | 360,000.00   |
| 28  | 230000010    | Small Ditch Excavation                  | 69000  | m3   | 9.00         | 621,000.00   | 9.00       | 423,000.00   | 8.00       | 936,000.00   |
| 29  | 240000002*   | SAND SOCK                               | 100    | m3   | 7.80         | 780.00       | 8.50       | 586,500.00   | 12.00      | 564,000.00   |
| 30  | 240000004*   | CHECK DAM (STONE)                       | 600    | m    | 3.00         | 1,800.00     | 7.00       | 700.00       | 12.00      | 828,000.00   |
| 31  | 240000010*   | BIO-LOG                                 | 20     | Mg   | 100.00       | 2,000.00     | 12.00      | 7,200.00     | 10.00      | 1,000,000.00 |
| 32  | 240000120    | Silt Fence                              | 17     | Each | 65.00        | 1,105.00     | 40.00      | 800.00       | 10.00      | 6,000.00     |
| 33  | 240000020*   | DROP INLET BARRIER                      | 2800   | m    | 6.00         | 16,800.00    | 220.00     | 3,740.00     | 50.00      | 1,000.00     |
| 34  | 241000010*   | ENVIRONMENTAL CONTROL SUPERVISOR        | 53     | Each | 50.00        | 2,650.00     | 3.00       | 8,400.00     | 250.00     | 4,250.00     |
|     |              |   | 1      | Lump | 35,000.00    | 35,000.00    | 30.00      | 1,590.00     | 5.00       | 14,000.00    |
|     |              |   |        |      |              |              |            |              | 100.00     | 5,300.00     |

General Note 2)  
 Traffic Control Co

## General Note 23 Lighting Costs

Lighting Costs: Assume lighting interchanges only.

Cost for lighting on a reconstructed diamond interchange were \$200,000. Existing lighting was in place & power was existing. 500 South & Parrish lane are new interchanges w/out any existing facilities to tie into. Therefore, assume cost for diamond interchanges to be \$300,000 each. The 2 system to system interchanges are much more complex, estimate \$1,200,000 per interchange. This is an overall \$3,000,000 cost for lighting lump sum.



Utah Department of Transportation

Abstract of Bids

Project No: \*HDP-15-6(124)266, \*HDP-15-6(124)266NP  
 Project Name: I-15 & UNIVERSITY AVE  
 Type of Construction: RECONSTRUCT INTERCHANGE  
 Estimate Completion date on or before 07/01/1998  
 County: UTAH (49)

| Engineer's Estimate       |           |  |      | Bidder: |            | 06/13/2002 |            | Page 11 of 36 |  |
|---------------------------|-----------|--|------|---------|------------|------------|------------|---------------|--|
| No.                       | Item No.  | Description  | Qty  | Unit    | Unit Price | Amount     | Unit Price | Amount        | Bidder:  |
| 258                       | 830000150 | SIGNAL POWER SOURCE                                      | 2    | Each    | 460.00     | 920.00     | 575.00     | 1,150.00      | RALPH L WADSWORTH<br>CONSTR CO INC<br>71 E WADSWORTH PARK DR<br>DRAPER, UT 84020 |
| 259                       | 830000151 | STREET LIGHTING POWER SOURCE                             | 4    | Each    | 720.00     | 2,880.00   | 400.00     | 1,600.00      |  |
| 260                       | 830000160 | INSTALLATION OF STATE-FURNISHED MATERIAL                 | 1    | Lump    | 10,000.00  | 10,000.00  | 7,500.00   | 7,500.00      |  |
| 261                       | 830000170 | REMOVAL, RELOCATION, AND SALVAGING OF EXISTING EQUIPMENT | 1    | Lump    | 2,000.00   | 2,000.00   | 8,850.00   | 8,850.00      |  |
| 262                       | 830000180 | INSTALLATION OF STATE-FURNISHED MAST                     | 8    | Each    | 45.00      | 360.00     | 65.00      | 520.00        |  |
| 263                       | 83000019* | SIX PAIR NO. 19 SHIELDED STRANDED CABLE (IMSA 60-2)      | 1550 | m       | 4.90       | 7,595.00   | 4.10       | 6,355.00      |  |
| 264                       | 830000190 | TRENCHING AND BACKFILL                                   | 1511 | m       | 17.00      | 25,687.00  | 18.00      | 27,198.00     |  |
| 265                       | 83000037* | 75 MM GALVANIZED RIGID STEEL CONDUIT                     | 97   | m       | 32.00      | 3,104.00   | 75.00      | 7,275.00      |  |
| 266                       | 830000400 | UNDERGROUND SERVICE PEDESTAL WITH FOUNDATION             | 2    | Each    | 2,060.00   | 4,120.00   | 1,790.00   | 3,580.00      |  |
| 267                       | 83000120* | PLASTIC TYPE I DOUBLE JUNCTION BOX                       | 55   | Each    | 140.00     | 7,700.00   | 155.00     | 8,525.00      |  |
| 268                       | 83000122* | PLASTIC TYPE II DOUBLE JUNCTION BOX                      | 5    | Each    | 280.00     | 1,400.00   | 350.00     | 1,750.00      |  |
| 269                       | 83000500* | 3.0 M STEEL SIGNAL POLE WITH FOUNDATION                  | 2    | Each    | 1,000.00   | 2,000.00   | 900.00     | 1,800.00      |  |
| 270                       | 83000600* | TEMPORARY WIRING OF TRAFFIC SIGNALS                      | 1    | Lump    | 1,000.00   | 1,000.00   | 6,580.00   | 6,580.00      |  |
| Subtotal                  |           |  |      |         |            | 166,567.20 |            | 173,042.45    |  |
| 60 - LIGHTING 70-LIGHTING |           |  |      |         |            |            |            |               |  |
| 271                       | 835000020 | PLASTIC TYPE I DOUBLE JUNCTION BOX                       | 42   | Each    | 145.00     | 6,090.00   | 155.00     | 6,510.00      |  |
| 272                       | 840000008 | 38 MM PVC SCHEDULE 40 CONDUIT                            | 2410 | m       | 8.00       | 19,280.00  | 6.00       | 14,460.00     |  |
| 273                       | 840000009 | 38 MM PVC SCHEDULE 80 CONDUIT                            | 140  | m       | 7.00       | 980.00     | 7.00       | 980.00        |  |
| 274                       | 840000012 | 50 MM PVC SCHEDULE 40 CONDUIT                            | 450  | m       | 6.00       | 2,700.00   | 6.50       | 2,925.00      |  |
| 275                       | 840000013 | 50 MM PVC SCHEDULE 80 CONDUIT                            | 20   | m       | 8.00       | 160.00     | 8.00       | 160.00        |  |
| 276                       | 840000030 | TRENCHING AND BACKFILL                                   | 2860 | m       | 16.50      | 47,190.00  | 18.00      | 51,480.00     |  |
| 277                       | 840000052 | NO. 6 RHH-USE-RHW CABLE                                  | 6060 | m       | 2.30       | 13,938.00  | 2.40       | 14,544.00     |  |
| 278                       | 840000053 | NO. 4 RHH-USE-RHW CABLE                                  | 630  | m       | 2.20       | 1,386.00   | 2.75       | 1,732.50      |  |
| 279                       | 840000054 | NO. 2 RHH-USE-RHW CABLE                                  | 790  | m       | 2.80       | 2,212.00   | 3.50       | 2,765.00      |  |
| 280                       | 84000007* | GROUND ROD 16 MM X 2.50 M                                | 42   | Each    | 52.00      | 2,184.00   | 45.00      | 1,890.00      |  |
| 281                       | 840000070 | GROUND WIRE NO. 6  | 3740 | m       | 2.00       | 7,480.00   | 1.50       | 5,610.00      |  |
| 282                       | 840000109 | TYPE III 90 DEGREE LUMINAIRE 400 WATT                    | 22   | Each    | 400.00     | 8,800.00   | 365.00     | 8,030.00      |  |
| 283                       | 840000502 | UNDERSTRUCTURE LIGHTING                                  | 1    | Each    | 2,500.00   | 2,500.00   | 5,900.00   | 5,900.00      |  |
| 284                       | 840000600 | LIGHT POLE ASSEMBLY WITH BREAKAWAY BASE                  | 17   | Each    | 2,000.00   | 34,000.00  | 2,570.00   | 43,690.00     |  |
| 285                       | 84000070* | RELOCATE LIGHT POLE                                      | 5    | Each    | 750.00     | 3,750.00   | 2,600.00   | 13,000.00     |  |
| Subtotal                  |           |  |      |         |            | 178,814.80 |            | 178,814.80    |  |
| 271                       | 835000020 | PLASTIC TYPE I DOUBLE JUNCTION BOX                       | 42   | Each    | 145.00     | 6,090.00   | 155.00     | 6,510.00      |  |
| 272                       | 840000008 | 38 MM PVC SCHEDULE 40 CONDUIT                            | 2410 | m       | 8.00       | 19,280.00  | 6.00       | 14,460.00     |  |
| 273                       | 840000009 | 38 MM PVC SCHEDULE 80 CONDUIT                            | 140  | m       | 7.00       | 980.00     | 7.00       | 980.00        |  |
| 274                       | 840000012 | 50 MM PVC SCHEDULE 40 CONDUIT                            | 450  | m       | 6.00       | 2,700.00   | 6.50       | 2,925.00      |  |
| 275                       | 840000013 | 50 MM PVC SCHEDULE 80 CONDUIT                            | 20   | m       | 8.00       | 160.00     | 8.00       | 160.00        |  |
| 276                       | 840000030 | TRENCHING AND BACKFILL                                   | 2860 | m       | 16.50      | 47,190.00  | 18.00      | 51,480.00     |  |
| 277                       | 840000052 | NO. 6 RHH-USE-RHW CABLE                                  | 6060 | m       | 2.30       | 13,938.00  | 2.40       | 14,544.00     |  |
| 278                       | 840000053 | NO. 4 RHH-USE-RHW CABLE                                  | 630  | m       | 2.20       | 1,386.00   | 2.75       | 1,732.50      |  |
| 279                       | 840000054 | NO. 2 RHH-USE-RHW CABLE                                  | 790  | m       | 2.80       | 2,212.00   | 3.50       | 2,765.00      |  |
| 280                       | 84000007* | GROUND ROD 16 MM X 2.50 M                                | 42   | Each    | 52.00      | 2,184.00   | 45.00      | 1,890.00      |  |
| 281                       | 840000070 | GROUND WIRE NO. 6  | 3740 | m       | 2.00       | 7,480.00   | 1.50       | 5,610.00      |  |
| 282                       | 840000109 | TYPE III 90 DEGREE LUMINAIRE 400 WATT                    | 22   | Each    | 400.00     | 8,800.00   | 365.00     | 8,030.00      |  |
| 283                       | 840000502 | UNDERSTRUCTURE LIGHTING                                  | 1    | Each    | 2,500.00   | 2,500.00   | 5,900.00   | 5,900.00      |  |
| 284                       | 840000600 | LIGHT POLE ASSEMBLY WITH BREAKAWAY BASE                  | 17   | Each    | 2,000.00   | 34,000.00  | 2,570.00   | 43,690.00     |  |
| 285                       | 84000070* | RELOCATE LIGHT POLE                                      | 5    | Each    | 750.00     | 3,750.00   | 2,600.00   | 13,000.00     |  |

General Note 23  
 Lighting Costs

Utah Department of Transportation

Abstract of Bids

Project No: \*IHP-15-6(124)266, \*IHP-15-6(124)266NP  
 Project Name: I-15 & UNIVERSITY AVE  
 Type of Construction: RECONSTRUCT INTERCHANGE  
 Estimate Completion date on or before 07/01/1998  
 County: UTAH (49)

|                                      |            |   |      |      |                  |               |  |               |                         |           |                        |            |
|--------------------------------------|------------|---|------|------|------------------|---------------|--|---------------|-------------------------|-----------|------------------------|------------|
| Utah Department of Transportation    |            |   |      |      | Abstract of Bids |               | Project No: *IHDP-15-6(124)/266, *IHDP-15-6(124)/266NP |               | 06/13/2002              |           | Page 12 of 36          |            |
|                                      |            |   |      |      |                  |               | Project Name: I-15 & UNIVERSITY AVE                    |               | Bidder:                 |           | Bidder:                |            |
|                                      |            |   |      |      |                  |               | Type of Construction: RECONSTRUCT INTERCHANGE          |               | WADSWORTH BROS CONST CO |           | RALPH L WADSWORTH      |            |
|                                      |            |   |      |      |                  |               | Estimate Completion date on or before 07/01/1998       |               | INC                     |           | CONSTR CO INC          |            |
|                                      |            |   |      |      |                  |               | County: UTAH (49)                                      |               | 13526 S. 110 W.         |           | 71 E WADSWORTH PARK DR |            |
|                                      |            |   |      |      |                  |               |  |               | DRAPER, UT 84020        |           | DRAPER, UT 84020       |            |
| No.                                  | Item No.   | Description   | Qty  | Unit | Unit Price       | Amount        | Unit Price   | Amount        | Unit Price              | Amount    | Unit Price             | Amount     |
| 286                                  | 840002000  | LIGHT POLE FOUNDATION   | 22   | Each | 875.00           | 19,250.00     | 900.00   | 19,800.00     | 900.00                  | 19,800.00 | 900.00                 | 19,800.00  |
| 80 - NON-PARTICIPATING 11-PROVO CITY |            |   |      |      |                  | 171,900.00    |  | 183,556.50    |                         |           |                        | 187,507.00 |
| Subtotal                             |            |   |      |      |                  |               |  |               |                         |           |                        |            |
| 287                                  | 210000010  | ROADWAY EXCAVATION  | 5720 | m3   | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 288                                  | 212000010* | OVERBURDEN SALVAGE AND PLACEMENT                                      | 3000 | m3   | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 289                                  | 212000020* | REFUSE REMOVAL AND DISPOSAL   | 6270 | m3   | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 290                                  | 214000001* | SALVAGE & SPREAD WETLAND SOIL   | 527  | m3   | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 291                                  | 220000010  | BORROW  | 450  | m3   | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 292                                  | 23200000S* | COMPACTED CLAY LANDFILL COVER (200 MM THICK)                          | 650  | m3   | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 293                                  | 62000010S  | CONTRACTOR FURNISHED TOPSOIL  | 1620 | m2   | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 294                                  | 90102300*  | 1500 MM SMOOTH-LINED PIPE CULVERT CLASS A                             | 22   | m    | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 295                                  | 904000002* | DIRECT JACKING 1500 MM CONCRETE PIPE                                  | 19   | m    | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 296                                  | 904000003* | 1500 MM REINFORCED CONCRETE PIPE CULVERT CLASS A (FOR DIRECT JACKING) | 19   | m    | 0.00             | 0.00          |  |               |                         |           |                        |            |
| 80 - NON-PARTICIPATING 31-PROVO CITY |            |   |      |      |                  | 0.00          |  | 0.00          |                         |           |                        |            |
| Subtotal                             |            |   |      |      |                  |               |  |               |                         |           |                        |            |
| 297                                  | 63500110*  | PLANTS - SALIX AMYGDALOIDES PEACHLEAF WILLOW, 25 MM CALIPER           | 17   | Each | 0.00             | 0.00          |  | 0.00          |                         | 0.00      |                        | 0.00       |
| Subtotal                             |            |   |      |      |                  |               |  |               |                         |           |                        |            |
| Total:                               |            |   |      |      |                  | 10,397,644.50 |  | 10,352,620.78 |                         |           |                        | 0.00       |
| Percent of Engineer's Estimate:      |            |   |      |      |                  |               |  |               |                         |           |                        |            |

General Note 23  
 Lighting Costs

# General Note 26 ROW Costs

David J. West is a senior Right-of-Way associate for the Utah Department of Transportation with 30 years of experience. Mr. West prepared conceptual Right-of-Way cost estimates for the Denver and Rio Grande alternatives.

4/2003  
David J. West

# General Note 26 Row Costs

From: LaMar Mabey  
To: Bethany Shingleton  
Date: 10/1/03 3:08PM  
Subject: Shotgun estimates

I have reviewed the shotgun estimates with the various alignments and find them to be acceptable.

LM

CC: David West

# General Note 26 ROW Costs

| Antelope Island Alignment               |                    |                     |
|---|--------------------|---------------------|
|   | Miles              | Feet                |
| Length on Land=                         | 6.0                | 31,680              |
| Length in Marsh=                        | 14.2               | 74,976              |
| Length on Island=                       | 5.0                | 26,400              |
| Length on water=                        | 4.0                | 21,120              |
| Total Length=                           | 29.2               | 154,176             |
| ROW Width=                              | 312                | ft                  |
| ROW amount                              | Sq ft              | Acres               |
| Land Area=                              | 9,884,160          | 227                 |
| Marsh Area=                             | 23,392,512         | 537                 |
| Island Area=                            | 8,236,800          | 189                 |
| Water Area=                             | 6,589,440          | 151                 |
| Land Values                             | Per acre           | Cost                |
| Land cost vary due to location          |                    |                     |
| 15 acres at                             | 100,000            | \$1,500,000         |
| 15 acres at                             | 35,000             | \$525,000           |
| 37 acres at                             | 25,000             | \$925,000           |
| 160 acres at                            | 7,000              | \$1,120,000         |
| Marsh=                                  | 3,500              | \$1,879,564         |
| Island=                                 | 25,000             | \$4,727,273         |
| Water=                                  | Cost of permits    | \$4,000,000         |
|   | <b>Subtotal=</b>   | <b>\$14,676,836</b> |
| Misc. Costs                             | Cost               |                     |
| Appraisal/Review/Acquisition/Relocation | \$550,000          |                     |
| Court Costs                             | \$1,500,000        |                     |
| Misc Costs (unforseen)                  | \$550,000          |                     |
| Utility/R/W                             | \$550,000          |                     |
|   | <b>Subtotal=</b>   | <b>\$3,150,000</b>  |
|   | <b>Total cost=</b> | <b>\$17,826,836</b> |

# General Note 26 ROW Costs

| Trans Bay Alignment                     |                     |                     |
|---|---------------------|---------------------|
|   | Miles               | Feet                |
| Length on Land=                         | 4.6                 | 24,288              |
| Length in Marsh=                        | 7.0                 | 36,960              |
| Length on water=                        | 8.0                 | 42,240              |
| Total Length=                           | 19.6                | 103,488             |
|   |                     |                     |
| ROW Width=                              | 312                 | ft                  |
|   |                     |                     |
| ROW amount                              | Sq ft               | Acres               |
| Land Area=                              | 7,577,856           | 174                 |
| Marsh Area=                             | 11,531,520          | 265                 |
| Water Area=                             | 32,288,256          | 741                 |
|   |                     |                     |
| Land Values                             | Per acre            | Cost                |
| Land cost vary due to location          |                     |                     |
| 15 acres at                             | 35,000              | \$525,000           |
| 15 acres at                             | 100,000             | \$1,500,000         |
| 144 acres at                            | 25,000              | \$3,600,000         |
| Marsh=                                  | 3,500               | \$926,545           |
| Water=                                  | Cost of permits     | \$8,000,000         |
|   | <b>Subtotal=</b>    | <b>\$14,551,545</b> |
|   |                     |                     |
| Misc. Costs                             | Cost                |                     |
| Appraisal/Review/Acquisition/Relocation | \$650,000           |                     |
| Court Costs                             | \$730,000           |                     |
| Misc Costs (unforseen)                  | \$550,000           |                     |
| Utility/R/W                             | \$550,000           |                     |
| <b>Subtotal=</b>                        | <b>\$2,480,000</b>  |                     |
| <b>Total cost=</b>                      | <b>\$17,031,545</b> |                     |

## General Note 26

### Row Costs

| Farmington Bay Alignment                |                     |                     |
|---|---------------------|---------------------|
|   | Miles               | Feet                |
| Length on Land=                         | 10.6                | 55,968              |
| Length on water=                        | 4.3                 | 22,704              |
| Total Length=                           | 14.9                | 78,672              |
|   |                     |                     |
| ROW Width=                              | 312                 | feet                |
|   |                     |                     |
| ROW amount                              | Sq ft               | Acres               |
| Land Area=                              | 17,462,016          | 401                 |
| Water Area=                             | 7,492,320           | 172                 |
|   |                     |                     |
| Land Values                             | Per acre            | Cost                |
| Land cost vary due to location          |                     |                     |
| 380 acres at                            | 25,000              | \$9,500,000         |
| 20 acres at                             | 100,000             | \$2,000,000         |
| Water=                                  | Cost of permits     | \$4,300,000         |
|   | <b>Subtotal=</b>    | <b>\$15,800,000</b> |
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| Misc. Costs                             | Cost                |                     |
| Appraisal/Review/Acquisition/Relocation | \$1,050,000         |                     |
| Court Costs                             | \$1,700,000         |                     |
| Misc Costs (unforseen)                  | \$750,000           |                     |
| Utility/R/W                             | \$1,000,000         |                     |
| <b>Subtotal=</b>                        | <b>\$4,500,000</b>  |                     |
| <b>Total cost=</b>                      | <b>\$20,300,000</b> |                     |

## General Note 26

### Row Costs

| Union Pacific Alignment                 |                      |                     |
|---|----------------------|---------------------|
|   | Miles                | Feet                |
| Length on Land=                         | 14.5                 | 76,560              |
| Total Length=                           | 14.5                 | 76,560              |
|   |                      |                     |
| ROW Width=                              | 312                  | feet                |
|   |                      |                     |
| ROW amount                              | Sq ft                | Acres               |
| Land Area=                              | 23,886,720           | 548                 |
|   |                      |                     |
| Land Values                             | Per acre             | Cost                |
| 548 acres at                            | 125,000              | \$68,545,455        |
|   | <b>Subtotal=</b>     | <b>\$68,545,455</b> |
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| Misc. Costs                             | Cost                 |                     |
| Appraisal/Review/Acquisition/Relocation | \$3,400,000          |                     |
| Court Costs                             | \$15,180,000         |                     |
| Misc Costs (unforseen)                  | \$7,000,000          |                     |
| Utility/R/W                             | \$8,000,000          |                     |
| <b>Subtotal=</b>                        | <b>\$33,580,000</b>  |                     |
| <b>Total cost=</b>                      | <b>\$102,125,455</b> |                     |



## General Note 26 Row Costs

| <b>Denver and Rio Grande Alignment</b>  |                     |                     |
|---|---------------------|---------------------|
|   | Miles               | Feet                |
| Length on Land=                         | 14.0                | 73,920              |
| Total Length=                           | 14.0                | 73,920              |
|   |                     |                     |
| ROW Width=                              | 312                 | feet                |
|   |                     |                     |
| ROW amount                              | Sq ft               | Acres               |
| Land Area=                              | 23,063,040          | 529                 |
|   |                     |                     |
| Land Values                             | Per acre            | Cost                |
| 529 acres at                            | 100,000             | \$52,945,455        |
|   | <b>Subtotal=</b>    | <b>\$52,945,455</b> |
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| Misc. Costs                             | Cost                |                     |
| Appraisal/Review/Acquisition/Relocation | \$3,250,000         |                     |
| Court Costs                             | \$11,850,000        |                     |
| Misc Costs (unforseen)                  | \$5,000,000         |                     |
| Utility/R/W                             | \$6,000,000         |                     |
| <b>Subtotal=</b>                        | <b>\$26,100,000</b> |                     |
| <b>Total cost=</b>                      | <b>\$79,045,455</b> |                     |

## General Rule 26 Now Costs

| <b>Denver and Rio Grande Alignment 80 m</b> |                     |                     |
|---|---------------------|---------------------|
|   | Miles               | Feet                |
| Length on Land=                             | 14.0                | 73,920              |
| Total Length=                               | 14.0                | 73,920              |
|   |                     |                     |
| ROW Width=                                  | 261 feet            |                     |
|   |                     |                     |
| ROW amount                                  | Sq ft               | Acres               |
| Land Area=                                  | 19,293,120          | 443                 |
|   |                     |                     |
| Land Values                                 | Per acre            | Cost                |
| 443 acres at                                | 100,000             | \$44,290,909        |
|   | <b>Subtotal=</b>    | <b>\$44,290,909</b> |
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| Misc. Costs                                 | Cost                |                     |
| Appraisal/Review/Acquisition/Relocation     | \$3,250,000         |                     |
| Court Costs                                 | \$11,850,000        |                     |
| Misc Costs (unforseen)                      | \$5,000,000         |                     |
| Utility/R/W                                 | \$6,000,000         |                     |
| <b>Subtotal=</b>                            | <b>\$26,100,000</b> |                     |
| <b>Total cost=</b>                          | <b>\$70,390,909</b> |                     |

## General Note 26 Row Costs

| <b>Denver and Rio Grande Alignment 71 m</b> |                     |                     |
|---|---------------------|---------------------|
|   | <b>Miles</b>        | <b>Feet</b>         |
| Length on Land=                             | 14.0                | 73,920              |
| Total Length=                               | 14.0                | 73,920              |
|   |                     |                     |
| ROW Width=                                  | 234 feet            |                     |
|   |                     |                     |
| ROW amount                                  | Sq ft               | Acres               |
| Land Area=                                  | 17,297,280          | 397                 |
|   |                     |                     |
| Land Values                                 | Per acre            | Cost                |
| 397 acres at                                | 100,000             | \$39,709,091        |
|   | <b>Subtotal=</b>    | <b>\$39,709,091</b> |
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| Misc. Costs                                 | Cost                |                     |
| Appraisal/Review/Acquisition/Relocation     | \$3,250,000         |                     |
| Court Costs                                 | \$11,850,000        |                     |
| Misc Costs (unforseen)                      | \$5,000,000         |                     |
| Utility/R/W                                 | \$6,000,000         |                     |
|   |                     |                     |
| <b>Subtotal=</b>                            | <b>\$26,100,000</b> |                     |
| <b>Total cost=</b>                          | <b>\$65,809,091</b> |                     |

## General Note 26

### Now Costs

| Great Salt Lake Alignment               |                     |                     |
|---|---------------------|---------------------|
|   | Miles               | Feet                |
| Length on Land=                         | 14.0                | 73,920              |
| Total Length=                           | 14.0                | 73,920              |
|   |                     |                     |
| ROW Width=                              | 312                 | feet                |
|   |                     |                     |
| ROW amount                              | Sq ft               | Acres               |
| Land Area=                              | 23,063,040          | 529                 |
|   |                     |                     |
| Land Values                             | Per acre            | Cost                |
| 563 acres at                            | 85,000              | \$45,003,636        |
|   | <b>Subtotal=</b>    | <b>\$45,003,636</b> |
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| Misc. Costs                             | Cost                |                     |
| Appraisal/Review/Acquisition/Relocation | \$1,350,000         |                     |
| Court Costs                             | \$5,000,000         |                     |
| Misc Costs (unforeseen)                 | \$1,000,000         |                     |
| Utility/R/W                             | \$1,500,000         |                     |
| <b>Subtotal=</b>                        | <b>\$8,850,000</b>  |                     |
| <b>Total cost=</b>                      | <b>\$53,853,636</b> |                     |

# General Note 27 Wetland Mitigation Costs

| Wetlands Mitigation Costs                                   |              |
|---|--------------|
| <b>Legacy Preferred Alignment</b>                           |              |
| Actual ROW Costs for Mitigation Property<br>(per Dave West) | \$20,500,000 |
| Improvement Costs   | \$4,500,000  |
| Total=  | \$25,000,000 |
| Preferred alternative wetland impacts                       | 114 acres    |
| Cost per acre=  | \$219,298    |
| <b>Regional Alignments</b>                                  |              |
| <i>Antelope Island</i>                                      |              |
| Estimated Wetland Impacts=                                  | 320 acres    |
| Wetland Mitigation Cost=                                    | \$70,175,439 |
| <i>Trans Bay</i>  |              |
| Estimated Wetland Impacts=                                  | 380 acres    |
| Wetland Mitigation Cost=                                    | \$83,333,333 |
| <i>Denver and Rio Grande</i>                                |              |
| Estimated Wetland Impacts=                                  | 95 acres     |
| Wetland Mitigation Cost=                                    | \$18,640,351 |
| <i>Union Pacific</i>  |              |
| Estimated Wetland Impacts=                                  | 60 acres     |
| Wetland Mitigation Cost=                                    | \$13,157,895 |
| <i>Farmington Bay</i>                                       |              |
| Estimated Wetland Impacts=                                  | 250 acres    |
| Wetland Mitigation Cost=                                    | \$54,824,561 |

DRG=85 acres  
 $85 \times \$219,298.2 = 18,640,351$

*Ryan Paulsen*  
*May 23, 2003*

# Abstract of Bids

Project No.: IHPD-15-6(124)266, IHPD-15-6(124)266NP  
 Project Name: I-15 & UNIVERSITY AVE  
 Type of Construction: RECONSTRUCT INTERCHANGE  
 Estimate Completion date on or before 07/01/1998  
 County: UTAH (49)

| No.          | Item No.   | Description                                   | Qty   | Unit | Unit Price | Amount     | Unit Price | Amount     | Unit Price | Amount     |
|--------------|------------|---|-------|------|------------|------------|------------|------------|------------|------------|
| 10 - ROADWAY |            |   |       |      |            |            |            |            |            |            |
| 1            | 151000010  | MOBILIZATION                                  | 1     | Lump | 500,000.00 | 500,000.00 |            | 430,000.00 |            | 435,000.00 |
| 2            | 160000010  | BOUNDARY SURVEY AND SURVEY PLAT               | 1     | Lump | 15,000.00  | 15,000.00  |            | 1,500.00   |            | 1,500.00   |
| 3            | 160000015* | RIGHT-OF-WAY MARKERS                          | 54    | Each | 100.00     | 5,400.00   |            | 10,800.00  |            | 10,800.00  |
| 4            | 185000000  | EQUAL OPPORTUNITY TRAINING                    | 7000  | Hour | 0.80       | 5,600.00   |            | 5,600.00   |            | 5,600.00   |
| 5            | 201000010  | CLEAR AND GRUB                                | 1     | Lump | 12,000.00  | 12,000.00  |            | 15,000.00  |            | 50,000.00  |
| 6            | 202000020  | REMOVE CONCRETE PAVEMENT                      | 6260  | m2   | 8.00       | 50,080.00  |            | 37,560.00  |            | 40,690.00  |
| 7            | 202000030  | REMOVE ASPHALT PAVEMENT                       | 33950 | m2   | 2.20       | 74,690.00  |            | 50,925.00  |            | 101,850.00 |
| 8            | 202000040  | REMOVE CONCRETE SIDEWALK                      | 925   | m2   | 10.00      | 9,250.00   |            | 1,850.00   |            | 4,162.50   |
| 9            | 202000060  | REMOVE CONCRETE CURB                          | 175   | m    | 5.00       | 875.00     |            | 875.00     |            | 982.50     |
| 10           | 202000070  | REMOVE CONCRETE CURB AND GUTTER               | 2780  | m    | 7.50       | 20,850.00  |            | 22,240.00  |            | 19,450.00  |
| 11           | 20200009*  | REMOVE PUMP STATION                           | 1     | Lump | 5,000.00   | 5,000.00   |            | 10,000.00  |            | 20,000.00  |
| 12           | 202000120  | REMOVE MANHOLE                                | 4     | Each | 500.00     | 2,000.00   |            | 300.00     |            | 1,200.00   |
| 13           | 202000130  | REMOVE CATCH BASIN                            | 19    | Each | 300.00     | 5,700.00   |            | 250.00     |            | 4,750.00   |
| 14           | 202000170  | REMOVE GUARDRAIL                              | 294   | m    | 7.00       | 2,058.00   |            | 5.00       |            | 1,470.00   |
| 15           | 202000180  | REMOVE FENCE                                  | 180   | m    | 3.00       | 540.00     |            | 3.00       |            | 540.00     |
| 16           | 202000240  | REMOVE PIPE CULVERT                           | 580   | m    | 30.00      | 17,400.00  |            | 25.00      |            | 14,500.00  |
| 17           | 20200172*  | REMOVE TRAFFIC CONTROL CABLE                  | 232   | m    | 5.00       | 1,160.00   |            | 3.50       |            | 812.00     |
| 18           | 20200173*  | REMOVE IMPACT ATTENUATOR                      | 2     | Each | 750.00     | 1,500.00   |            | 500.00     |            | 1,000.00   |
| 19           | 20200174*  | REMOVE CRASH CUSHIONS                         | 69    | Each | 25.00      | 1,725.00   |            | 50.00      |            | 3,450.00   |
| 20           | 20200175*  | REMOVE PRECAST CONCRETE BARRIER               | 8     | m    | 35.00      | 280.00     |            | 20.00      |            | 160.00     |
| 21           | 20200236*  | REMOVE GROUND LIGHT                           | 2     | Each | 75.00      | 150.00     |            | 100.00     |            | 200.00     |
| 22           | 20200237*  | REMOVE JUNCTION BOX                           | 12    | Each | 50.00      | 600.00     |            | 50.00      |            | 600.00     |
| 23           | 20200238*  | REMOVE LIGHT POLE                             | 2     | Each | 200.00     | 400.00     |            | 395.00     |            | 790.00     |
| 24           | 20200310*  | REMOVE CONCRETE RETAINING WALL                | 21    | m2   | 50.00      | 1,050.00   |            | 25.00      |            | 525.00     |
| 25           | 20200330*  | REMOVE LANDSCAPE ROCK                         | 24    | Each | 50.00      | 1,200.00   |            | 50.00      |            | 1,200.00   |
| 26           | 204000010  | DUST CONTROL AND WATERING                     | 25000 | kL   | 3.25       | 81,250.00  |            | 3.50       |            | 87,500.00  |
| 1            | 210000010  | ROADWAY EXCAVATION                            | 51600 | m3   | 5.80       | 299,280.00 |            |            |            |            |
| 2            | 212000010* | OVERBURDEN SALVAGE AND PLACEMENT              | 51600 | m3   | 5.80       | 299,280.00 |            | 6.00       |            | 309,600.00 |
| 28           | 212000010* | OVERBURDEN SALVAGE AND PLACEMENT              | 11800 | m3   | 4.50       | 53,100.00  |            |            |            |            |
| 29           | 212000020* | REFUSE REMOVAL AND DISPOSAL                   | 11800 | m3   | 4.50       | 53,100.00  |            | 4.00       |            | 47,200.00  |
| 3            | 212000020* | REFUSE REMOVAL AND DISPOSAL                   | 20500 | m3   | 9.00       | 184,500.00 |            | 8.00       |            | 164,000.00 |
| 30           | 213000001* | WETLAND MITIGATION SITE DEVELOPMENT (11.2 HA) | 20500 | m3   | 9.00       | 184,500.00 |            |            |            |            |
| 31           | 214000001* | SALVAGE & SPREAD WETLAND SOIL                 | 1     | Lump | 46,000.00  | 46,000.00  | 45,000.00  | 45,000.00  |            | 102,500.00 |
| 4            | 214000001* | SALVAGE & SPREAD WETLAND SOIL                 | 1172  | m3   | 10.00      | 11,720.00  |            |            | 36,000.00  | 36,000.00  |
|              |            |   | 1172  | m3   | 10.00      | 11,720.00  |            | 10.00      |            | 11,720.00  |
|              |            |   |       |      |            |            |            |            | 8.25       | 9,669.00   |

General Note 31  
 Mobilization Costs

Project No: \*IHPD-15-6(124)266, \*IHPD-15-6(124)266NP  
 Project Name: I-15 & UNIVERSITY AVE  
 Type of Construction: RECONSTRUCT INTERCHANGE  
 Estimate Completion date on or before 07/01/1998  
 County: UTAH (49)

| Abstract of Bids                                    |  |  |  | 06/13/2002           |  | Page 36 of 36    |  |
|---|--|--|--|----------------------|--|------------------|--|
| Description   |  |  |  | Bidder:              |  | Bidder:          |  |
| No. Item No. Description                            |  |  |  | GILBERT WESTERN CORP |  | GERBER CONST INC |  |
| Qty Unit  |  |  |  | 5789 W WELLS PARK RD |  | 815 E 675 S      |  |
| 22 Each   |  |  |  | W JORDAN, UT 84088   |  | LEHI, UT 84043   |  |
| Subtotal  |  |  |  | Unit Price           |  | Amount           |  |
| 80 - NON-PARTICIPATING 11-PROVO CITY                |  |  |  | 1,000.00             |  | 22,000.00        |  |
| 286 840002000 LIGHT POLE FOUNDATION                 |  |  |  | 875.00               |  | 19,250.00        |  |
| Subtotal  |  |  |  | 171,900.00           |  | 195,014.00       |  |
| 287 210000010 ROADWAY EXCAVATION                    |  |  |  | 0.00                 |  | 0.00             |  |
| 288 21200010* OVERBURDEN SALVAGE AND PLACEMENT      |  |  |  | 0.00                 |  | 0.00             |  |
| 289 21200020* REFUSE REMOVAL AND DISPOSAL           |  |  |  | 0.00                 |  | 0.00             |  |
| 290 21400001* SALVAGE & SPREAD WETLAND SOIL         |  |  |  | 0.00                 |  | 0.00             |  |
| 291 220000010 BORROW                                |  |  |  | 0.00                 |  | 0.00             |  |
| 292 2320000S* COMPACTED CLAY LANDFILL COVER (200    |  |  |  | 0.00                 |  | 0.00             |  |
| MM THICK)   |  |  |  | 0.00                 |  | 0.00             |  |
| 293 62000010S CONTRACTOR FURNISHED TOPSOIL          |  |  |  | 0.00                 |  | 0.00             |  |
| 294 90102300* 1500 MM SMOOTH-LINED PIPE CULVERT     |  |  |  | 0.00                 |  | 0.00             |  |
| CLASS A   |  |  |  | 0.00                 |  | 0.00             |  |
| 295 904000002* DIRECT JACKING 1500 MM CONCRETE PIPE |  |  |  | 0.00                 |  | 0.00             |  |
| 296 904000003* 1500 MM REINFORCED CONCRETE PIPE     |  |  |  | 0.00                 |  | 0.00             |  |
| CULVERT CLASS A (FOR DIRECT JACKING)                |  |  |  | 0.00                 |  | 0.00             |  |
| Subtotal  |  |  |  | 0.00                 |  | 0.00             |  |
| 80 - NON-PARTICIPATING 31-PROVO CITY                |  |  |  | 0.00                 |  | 0.00             |  |
| 297 63500110* PLANTS - SALIX AMYGDALOIDES           |  |  |  | 0.00                 |  | 0.00             |  |
| PEACHLEAF WILLOW, 25 MM CALIPER                     |  |  |  | 0.00                 |  | 0.00             |  |
| 17 Each   |  |  |  | 0.00                 |  | 0.00             |  |
| Subtotal  |  |  |  | 0.00                 |  | 0.00             |  |
| Total:  |  |  |  | 10,397,644.50        |  | 12,041,171.42    |  |
| Percent of Engineer's Estimate:                     |  |  |  | 115.81 %             |  | 122.95 %         |  |

\* Mobilization = 5%

035%

3.0%

General Note 31  
 Mobilization

# Refinery Cleanup Costs

## INTEROFFICE MEMORANDUM

From: KF Napp  
To: Dick Gorton, Lou Krug  
Date: November 12, 1997  
Subject: Incremental cost of traversing refineries adjacent to UPRR tracks

Three refineries would be traversed by Alignment Option X including (from S to N):

- Flying J at intersection of I-15 and I-215
- Crysen north of 2600 S between RR tracks
- Phillips at 500 S and I-15

Incremental costs for traversing the refineries include:

- Demolish tankage and distillation/cracking towers within 330 feet of UPRR ROW boundary.
- Design/build replacement tankage and distillation/cracking towers at unknown location.
- Excavate and dispose of 2-foot layer of soil within 330 foot wide Legacy ROW on refinery property.
- Replace with 2-foot clean structural fill.

The following assumptions were made to permit cost estimation:

1. All shallow soils on refinery property are impacted by petroleum hydrocarbons and will require excavation to a depth of 2-feet with clean fill replacement to prepare the ROW for roadway construction crews.
2. Tankage and distillation/cracking towers will be scrapped and new facilities will be designed and constructed (no re-use).
3. Contaminated groundwater or free product on the water table is not a concern and associated costs are not included in the incremental cost of Alignment X

The following unit costs were used (with basis):

- Demolition of tankage - \$6.00 per barrel capacity (42 gallons) - source is unidentified industry rep.
- Design/build tankage - \$10.00 per barrel - source is unidentified industry rep.
- Demolition of typical cracking/distillation tower - \$1M per unit - source is unidentified industry rep.
- Design/build typical cracking/distillation tower - \$100M per unit - source is multiple unidentified industry reps. Cost for design/build of cracking tower in Lake Charles Louisiana (Conoco) was apx \$125M. Relocation of existing distillation/cracking



## Refinery Clean-up Costs

facilities may require new permits with application of best available control technology, and public hearings further increasing the costs.

- Contaminated soils excavation, transport, disposal - \$30.00/cy - source is disposal costs associated with Portland Cement Site (disposal to subtitle D facility)
- Replacement clean fill purchase, transport, placement - \$8.00/cy - Means, 1993.

Other relevant sources of information include:

1. Existing tankage capacity - 1980 aerial photograph coupled with personal communication with Crysen refinery representative providing capacities for tanks observed on photograph. Tankage capacities at other refineries based on size (as viewed from above) relative to Crysen tanks.
2. Number of cracking/distillation towers - aerial photography and site reconnaissance conducted 11/11/97.

### FLYING J REFINERY

Total tankage within Alignment X ROW: 110,000 bbl

(4) 15,000 bbl

(7) 5,000 bbl

(5) 3,000 bbl

$(110,000 \text{ bbl}) \times (\$16.00/\text{bbl}) = \$1.8\text{M}$

Total cracking/distillation towers: 2

$(2) \times (\$101\text{M}) = \$202\text{M}$

Total cubic yards contaminated soils: 462,000

$(462,000\text{cy}) \times (\$38.00/\text{cy}) = \$17.5\text{M}$

TOTAL INCREMENTAL COST = \$221.3M

### CRYSEN REFINERY

Total tankage within Alignment X ROW: 158,000 bbl

(5) 30,000 bbl

(2) 4,000 bbl

## Refinery Cleanup Costs

$$(158,000 \text{ bbl}) \times (\$16.00/\text{bbl}) = \$2.53\text{M}$$

Total cracking/distillation towers: 0

Total cubic yards contaminated soils: 231,000

$$(231,000 \text{ cy}) \times (\$38.00/\text{cy}) = \$8.77\text{M}$$

TOTAL INCREMENTAL COST = \$11.3M

### PHILLIPS REFINERY

Total tankage within Alignment X ROW: 391,000 bbl

$$(391,000 \text{ bbl}) \times (\$16.00/\text{bbl}) = \$6.26\text{M}$$

Total cracking/distillation towers: 0

Total cubic yards of contaminated soils: 462,000

$$(462,000 \text{ cy}) \times (\$38.00/\text{cy}) = \$17.5\text{M}$$

TOTAL INCREMENTAL COST = \$17.56M

GRAND TOTAL = \$250.16M

**North Temple Landfill Cleanup**

|         |                              |          |    |      |           |
|---------|------------------------------|----------|----|------|-----------|
| Project | Legacy SEIS                  | Computed | TW | Date | 1/13/2003 |
| Subject | Region Cost Estimates        | Checked  |    | Date |           |
| Task    | North Temple Landfill Impact | Sheet    | 1  | of   | 1         |

The Antelope Island and Transbay Regional Alignments would impact the old North Temple Landfill  
 North Temple Landfill extends from approximately 5600 West to 7800 West and I-80 to about  
 Amelia Earhart Dr. (1/4 mile)

(Bill Rees UDEQ Personal Communication with Terry Warner 1-13-03)

**Assumptions:**

All wastes would be removed from right of way  
 1/4 mile (400 m) long, 100 m wide direct impact.  
 waste density 1200 lb/CY  
 waste depth 2 m (shallow GW ~6'), above native ground 1 m  
 total waste depth 3 m

|                              |                    |
|------------------------------|--------------------|
| Volume of waste removed      | 400 m length       |
|                              | 95 m width         |
|                              | 3 m depth          |
|                              | <hr/>              |
|                              | 114000 m3          |
| excavation side slopes (4:1) | <hr/>              |
|                              | 14400 m3           |
|                              | <hr/>              |
|                              | 128400 m3          |
|                              | <b>167941 CY</b>   |
|                              | <b>100765 tons</b> |

**Costs**

| Item                 | price (\$/CY) | total                    |
|----------------------|---------------|--------------------------|
| Waste Excavation     | 3             | 503822.7252              |
| Waste Hauling        | 2             | 335881.8168              |
| Hazardous Testing    | 1             | 167940.9084              |
| Disposal Fee         | 22.5 \$/ton   | 2267202.263              |
| Clean fill           | 5             | 839704.542               |
|                      |               | <b>4114552.256</b>       |
| <br>EPA coordination | 5%            | 205728 remedial workplan |
| contingencies        | 10%           | 411455                   |
| <br><b>TOTAL</b>     |               | <b>4731700</b>           |
| <br><b>say</b>       |               | <b>\$5,000,000</b>       |

The cost estimate for the Denver and Rio Grande Regional Alignment assumes environmental cleanup costs associated with crossing oil refinery properties. These calculations supplement a memo written to Dick Gorton from Ken Napp on Nov .12, 1997 to better describe the estimated cost for remediation.

Assumptions:

Petroleum contaminated soils to a depth of 2 feet.

All soils removed within ROW and 100 m on both sides of ROW

Total width for excavation, disposal, and replacement of soils= **300 m (990 ft)**

All storage tanks removed within the ROW and 100 m on both sides of ROW

Total width for cleanup and demolition, disposal, and replacement of tanks= **300 m (990 ft)**

Soil excavation, hauling, disposal, and replacement = \$38/cu yd

Tank demolition and replacement cost, \$16/tank capacity

**Crysen Refinery**

| <b>Soils</b> |                     |              |                     |
|--------------|---------------------|--------------|---------------------|
| Width        | 990 ft              |              |                     |
| depth        | 2                   |              |                     |
| Length       | <b>3150 ft</b>      | <b>Tanks</b> |                     |
|              | <b>0.6 miles</b>    | number       | capacity            |
| Volume       | 6237000 cu ft       |              | 5 30,000            |
| exc./replace | <b>231000 cu yd</b> |              | 2 4,000             |
|              | \$38 \$/cu yd       |              | <u>158000</u>       |
|              | <b>\$8,778,000</b>  | <b>Total</b> | <b>\$11,310,000</b> |
|              |                     |              | <b>\$2,528,000</b>  |
|              |                     |              | \$16                |

**Phillips Refinery**

| <b>Soils</b> |                     |              |                     |
|--------------|---------------------|--------------|---------------------|
| Width        | 990 ft              |              |                     |
| depth        | 2                   |              |                     |
| Length       | <b>6300 ft</b>      | <b>Tanks</b> |                     |
|              | <b>1.2 miles</b>    |              | 391,000 capacity    |
| Volume       | 12474000 cu ft      |              | \$16 per            |
| exc./replace | <b>462000 cu yd</b> |              | <b>\$6,256,000</b>  |
|              | \$38 \$/cu yd       |              |                     |
|              | <b>\$17,556,000</b> | <b>Total</b> | <b>\$23,810,000</b> |

**Total Length 1.8 miles**  
**D&RG Total Cost \$35.1 Million**

# Utah Department of Transportation

CSI - METRIC

## Statewide Standard Item Average Prices and Total Quantities

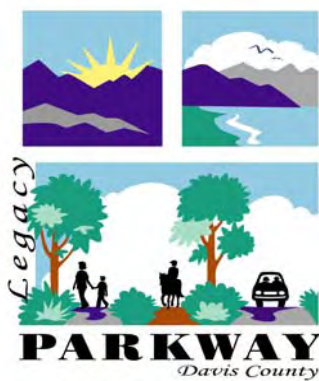
| Item Number | Description   | UOM  | Avg Unit Price | Total Qty | Last Year Avgd |
|-------------|---|------|----------------|-----------|----------------|
| 028220025   | Right-of-Way Fence, Type D (Wood Post)                | m    | \$9.18         | 100       | 2001           |
| 028220030   | Right-of-Way Fence, Type D (Metal Post)               | m    | \$10.26        | 200       | 2002           |
| 028220035   | Right-of-Way Fence, Type E (Wood Post)                | m    | \$13.13        | 120       | 2000           |
| 028220040   | Right-of-Way Fence, Type E (Metal Post)               | m    | \$6.10         | 40        | 2000           |
| 028220045   | Right-of-Way Fence, Type F (Wood Post)                | m    | \$0.00         |           |                |
| 028220050   | Right-of-Way Fence, Type F (Metal Post)               | m    | \$9.00         | 225       | 2001           |
| 028220055   | Right-of-Way Fence, Type G (Wood Post)                | m    | \$0.00         |           |                |
| 028220060   | Right-of-Way Fence, Type G (Metal Post)               | m    | \$8.50         | 1,500     | 2001           |
| 028220065   | Right-of-Way Gate 1.2 m                               | Each | \$0.00         |           |                |
| 028220070   | Right-of-Way Gate 1.8 m                               | Each | \$0.00         |           |                |
| 028220075   | Right-of-Way Gate 2.4 m                               | Each | \$306.67       | 6         | 2002           |
| 028220080   | Right-of-Way Gate 3.0 m                               | Each | \$0.00         |           |                |
| 028220085   | Right-of-Way Gate 3.7 m                               | Each | \$365.00       | 8         | 2002           |
| 028220090   | Right-of-Way Gate 4.3 m                               | Each | \$385.00       | 1         | 2002           |
| 028220095   | Right-of-Way Deer Gate                                | Each | \$0.00         |           |                |
| 028220100   | Swing Gate  | Each | \$214.00       | 1         | 2002           |
| 028220105   | Right-of-Way Brace Post                               | Each | \$120.69       | 192       | 2002           |
| 028250010   | Precast Concrete Cattle Guard                         | Each | \$20,172.50    | 2         | 2002           |
| 028410010   | Beam Guardrail  | m    | \$45.11        | 1,926     | 2002           |
| 028410020   | Double Beam Guardrail                                 | m    | \$50.00        | 70        | 2002           |
| 028410030   | Guardrail Transition Elements                         | Each | \$1,116.48     | 27        | 2002           |
| 028410040   | Precast Concrete Barrier                              | m    | \$63.77        | 6,618     | 2002           |
| 028410050   | Precast Concrete Barrier (Half Section)               | m    | \$72.00        | 126       | 2002           |
| 028410060   | Traffic Control Cable                                 | m    | \$32.00        | 50        | 2001           |
| 028410070   | Barrier Reflector                                     | Each | \$10.65        | 677       | 2002           |
| 028410080   | Cast-in-Place Constant Slope Barrier <i>Like J-15</i> | m    | \$150.00       | 744       | 2001           |
| 028420010   | Delineator Type I                                     | Each | \$18.87        | 1,058     | 2002           |
| 028420020   | Delineator Type II                                    | Each | \$15.00        | 96        | 2002           |
| 028420030   | Delineator - Culvert Marker                           | Each | \$24.90        | 52        | 2002           |
| 028420040   | Delineator - Maintenance Marker                       | Each | \$20.00        | 130       | 2002           |
| 028420050   | Delineator - Freeway Turn Around                      | Each | \$18.00        | 48        | 2001           |
| 028430005   | Attenuator Type A                                     | Each | \$24,000.00    | 1         | 2002           |
| 028430010   | Attenuator Type B                                     | Each | \$25,000.00    | 4         | 2002           |
| 028430015   | Attenuator Type C                                     | Each | \$3,859.00     | 4         | 2002           |
| 028430020   | Attenuator Type D                                     | Each | \$28,000.00    | 1         | 2001           |
| 028430025   | Attenuator Type E                                     | Each | \$2,500.00     | 2         | 2001           |
| 028430030   | End Section Type F                                    | Each | \$8,390.91     | 11        | 2001           |
| 028430035   | End Section Type G                                    | Each | \$2,071.71     | 38        | 2002           |
| 028430040   | End Section Type H                                    | Each | \$2,750.00     | 6         | 2002           |
| 028430045   | Marker Post and Mounting Hardware                     | Each | \$50.00        | 26        | 2002           |
| 028430050   | Object Marker Sheeting or Marker Plate Hardware       | Each | \$48.13        | 32        | 2002           |
| 028610005   | Precast Noise Wall 1.00 m                             | m    | \$180.00       | 4         | 2002           |
| 028610010   | Precast Noise Wall 1.25 m                             | m    | \$185.00       | 4         | 2002           |
| 028610015   | Precast Noise Wall 1.50 m                             | m    | \$190.00       | 4         | 2002           |
| 028610020   | Precast Noise Wall 1.75 m                             | m    | \$195.00       | 4         | 2002           |
| 028610025   | Precast Noise Wall 2.00 m                             | m    | \$205.00       | 4         | 2002           |
| 028610030   | Precast Noise Wall 2.25 m                             | m    | \$210.00       | 4         | 2002           |
| 028610035   | Precast Noise Wall 2.50 m                             | m    | \$215.00       | 4         | 2002           |
| 028610040   | Precast Noise Wall 2.75 m                             | m    | \$250.00       | 8         | 2002           |
| 028610045   | Precast Noise Wall 3.00 m                             | m    | \$260.00       | 4         | 2002           |
| 028610050   | Precast Noise Wall 3.25 m                             | m    | \$270.00       | 8         | 2002           |
| 028610055   | Precast Noise Wall 3.50 m                             | m    | \$280.00       | 4         | 2002           |
| 028610060   | Precast Noise Wall 3.75 m                             | m    | \$310.00       | 4         | 2002           |
| 028610065   | Precast Noise Wall 4.00 m                             | m    | \$310.00       | 1,620     | 2002           |
| 028610070   | Precast Noise Wall 4.25 m                             | m    | \$347.31       | 460       | 2001           |
| 028610075   | Precast Noise Wall 4.50 m                             | m    | \$378.00       | 20        | 2001           |
| 028610080   | Precast Noise Wall 4.75 m                             | m    | \$0.00         |           |                |
| 028610085   | Precast Noise Wall 5.00 m                             | m    | \$360.00       | 216       | 2002           |
| 028610090   | Precast Retaining/Noise Wall 2.25 m                   | m    | \$0.00         |           |                |

## APPENDIX B

### COMMUNITY SURVEY

The names of the D&RG Alignments were changed following the meetings with community leaders

| <u>Alignment</u> | <u>Old Name</u> |
|------------------|-----------------|
| DRG1             | A1              |
| DRG2             | A2              |
| DRG3             | C2              |
| DRG4             | C3              |
| DRG5             | C1              |



# LEGACY PARKWAY PROJECT

## D&RG Technical Memorandum Community Impact Survey Minutes DM#6424

Date/Time/Place : July 10, 2003  
10:30-11:30 a.m.  
Farmington City Hall

Distribution Date/Version : July 17, 2003

Final

### Woods Cross Attendees:

Gary Uresk (City Administrator), Tim Stephens (Community Development Director)

### HDR Attendees:

Bethany Shingleton, Terry Warner (notes preparer)

### UDOT Attendees:

Bryan Adams

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## PURPOSE

The purpose of this meeting was to solicit comments on the potential community and other environmental impacts associated with Legacy Parkway highway alignments within the Denver & Rio Grande (D&RG) Railroad Corridor.

## DISCUSSION

HDR presented a map showing conceptual D&RG alignments.

Gary expressed the diminished quality of life Woods Cross residents would experience with the addition of the highway alignments that follow the DRG track furthest south (A1, A2). Woods Cross is already bisected and is considered a “transportation corridor” with US 89, I-15, Union Pacific tracks, and D&RG in addition to several petroleum transmission lines. Citizens expressed opposition to commuter rail in its proposed location because of the community impacts, adding Legacy through their community would be an additional impact.



Adding a highway alignment would disrupt the community cohesion of the Woods Cross communities developing west of I-15 around the oil refineries. Gary stated that those not directly impacted would be more impacted than those relocated. Woods Cross is concerned with community instability; with people moving out because of the negative impacts of the highway on their quality of life, more homes would become rentals. This turn over would result in less cohesion in a historically cohesive community.

DRG alignments would disrupt 1100 West Street, an important N-S road for Woods Cross, which would displace traffic and redirect it through residential neighborhoods.

The eastern most DRG alignments may affect emergency vehicle mobility and access impacting public health and safety.

An interchange at 500 South would disrupt a commercial area. This area is also a planned redevelopment area between West Bountiful and Woods Cross.

Woods Cross feels it compromised in supporting the Preferred Legacy Parkway alternative. The Cities would have preferred more developable land east of the highway. Under the Preferred Alternative, development will be limited west of the Parkway, this will result in a decrease of the difficulty associated with running utilities and providing public services. Other than right around the interchange, there would be no development west of the Parkway.

The D&RG alignments would require providing additional utilities and services on the west side of the highway, increasing the cost and difficulty of providing such.

A highway along the D&RG would not be consistent with the City's General Plan (adopted June 2003) and would throw out 5 years of work that has went into its development. Significant public input went into the creation of the general plan. Gary presented the plan showing an open space buffer between the Legacy Parkway trail and any future developments east of the Parkway. The Legacy Parkway enhances future developments whereas the D&RG significantly impacts existing developments

A trail along the current D&RG alignment it would be possible to access parks and recreation areas. Utilizing the D&RG right of way for a highway would eliminate this possibility.

Woods Cross supports the trail system provided with the Preferred Alternative and the City has tied its trail system into Legacy. It would be a shame to trade the Legacy Parkway with its trail/berm for a ribbon of concrete through a community. Gary spoke to the transportation funding mechanisms designed to make transportation facilities a benefit to communities, therefore amenities that soften the impact need to be included. A trail also provides multi-modal options for transportation.

The Redwood Road Alternative would stimulate growth west of the highway, and therefore have a negative impact on the properties of concern to those who wish to protect the Great Salt Lake ecosystem.

A future elementary school is possible for an area south of 500 South and west of 1100 West. A planned residential development is slated west of Redwood Road. Businesses impacted (other than those along 500 South) include IHC Laundry and the developing Alunitech. See attached figure.

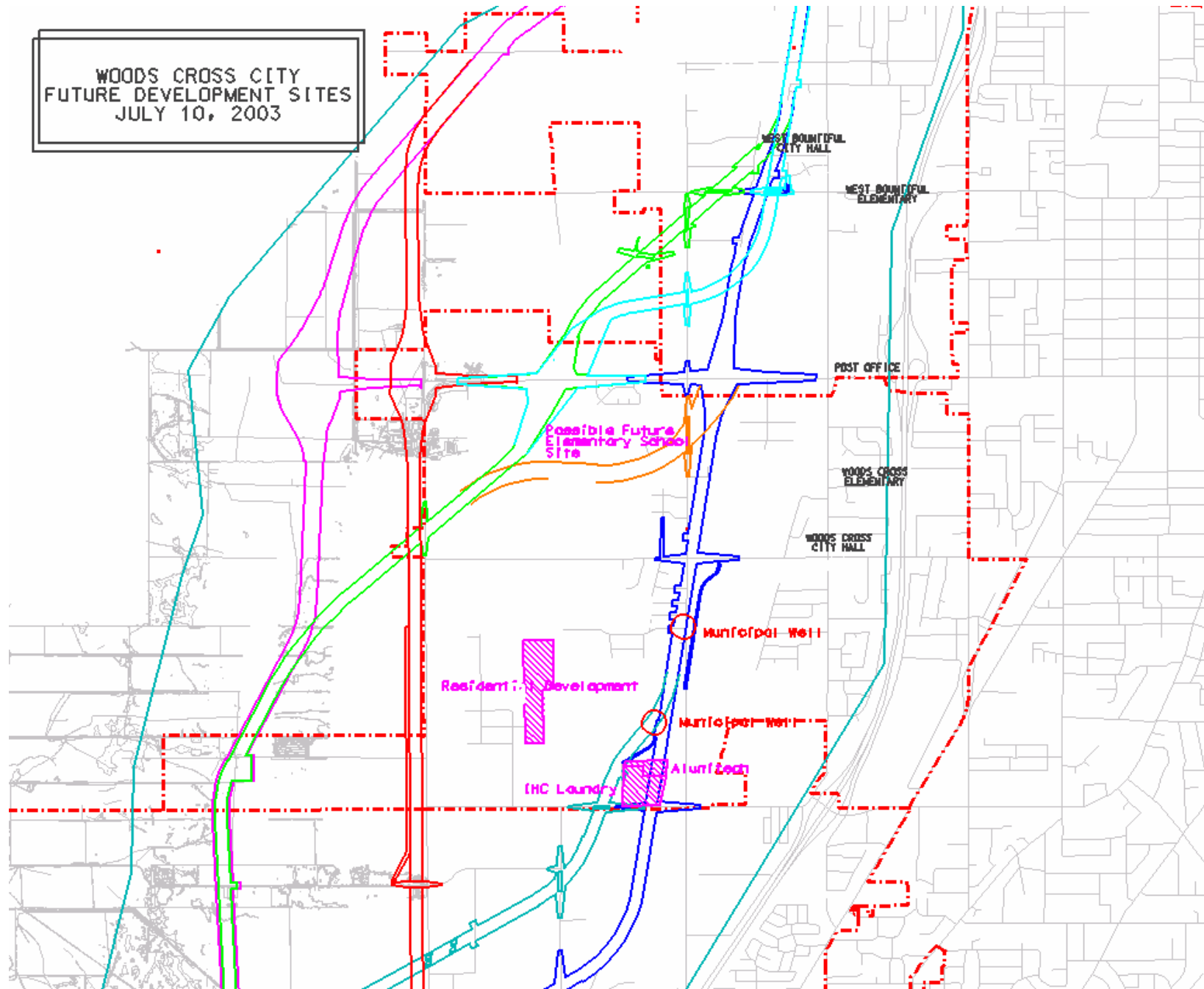
Eastern most DRG alignment would impact 2 major municipal drinking water wells. See attached figure.

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*These minutes reflect the understanding of the preparer. If an item needs clarification or correction, please comment to the preparer as soon as possible at 801-281-8892. The preparer will resolve the issue and distribute revised minutes.*

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WOODS CROSS CITY  
FUTURE DEVELOPMENT SITES  
JULY 10, 2003





# LEGACY PARKWAY PROJECT

## D&RG Technical Memorandum Community Impact Survey Minutes DM#6425

**Date/Time/Place** : July 10, 2003  
8:30-9:30 a.m.  
West Bountiful City

**Distribution Date/Version** : July 18, 2003  
Final

### West Bountiful City Attendees:

Wendell Wild  
Bill Flanders

### HDR Attendees:

Bethany Shingleton (notes preparer)  
Terry Warner

### UDOT Attendees:

Bryan Adams

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## PURPOSE

The purpose of this meeting was to solicit comments on the potential community and other environmental impacts associated with Legacy Parkway highway alignments within the Denver & Rio Grande (D&RG) Railroad Corridor.

## DISCUSSION

HDR presented a map showing conceptual D&RG alignments. West Bountiful City had prepared a written outline of the impacts associated with the conceptual alignments. The impacts were broken down by specific alignments (see below).

### *Alternative A1*

This alignment would remove 134 dwelling units, which is the equivalent of 11% of the single-family residential units within West Bountiful City.

This alignment splits the city, causing a large impact to neighborhood and community cohesion.

This alignment would require development of new frontage roads between 2350 North and 2200 North and between 2200 North and 1850 North. This would cause impacts to travel patterns and accessibility.

The cul-de-sacs north of Porter Lane are too long to meet city standards so frontage roads would be required.

There will be four highway crossings that would require continual maintenance that the city cannot afford.

The crossing street locations in existing residential neighborhoods is very intrusive due to the height of the facility. The height of the structures will cause visual impacts and reduce home values. The traffic noise will require placement of noise walls, which the city does not like. The traffic noise and noise walls are unnecessary intrusions into the community.

The 500 South interchange eliminates the commercial frontage within the City boundaries. This removal would reduce the City's revenue by approximately \$36,000 or 12% of the annual property tax revenue.

The City's master plan includes a "Rails-to-Trails" adaptation for the D&RG. This alignment destroys the trail concept. This alignment would provide pedestrian access at 4 locations within the 2-mile width of the city, whereas the master plan provides eight access points.

This alignment would adversely affect the air quality near existing residential developments.

### ***Alternative A2***

Similar impacts to Alternative A1.

### ***Alternative B***

This alignment impacts commercial development, therefore reducing the City's tax revenue. The city prefers the Legacy Preferred alignment in this area as a boundary to development.

### ***Alternative C1***

This alignment removes 145 dwelling units or the equivalent of 12% of the single-family residential units in West Bountiful.

This alignment would impact the area between 500 South and 200 North, which is zoned residential and agricultural.

This alignment splits the community, and will have high impacts to neighborhood cohesion. This alignment severs two existing subdivisions and also creates a north/south division at 1100 West.

This alignment would require development of new frontage roads between 2350 North and 2200 North, 2200 North and 1850 North, and 400 North to 700 North. This would cause impacts to travel patterns and accessibility.

There will be five highway crossings that will require continual maintenance that the city cannot afford.

The crossing street locations in existing residential neighborhoods is very intrusive due to the height of the facility. The height of the structures will cause visual impacts and reduce home values. The traffic noise will require placement of noise walls, which the city does not like. The traffic noise and noise walls are unnecessary intrusions into the community.

The 500 South Interchange eliminates the commercial frontage within the City boundaries. This removal would reduce the City's revenue by approximately \$40,000 or 13% of the annual property tax revenue.

The City's master plan includes a "Rails-to-Trails" adaptation for the D&RG. This alignment destroys the trail concept. This alignment would provide pedestrian access at 4 locations within the 2-mile width of the city, whereas the master plan provides eight access points.

### ***Alternative C2***

This alignment would have similar impacts as alternative A1.

### ***Alternative C3***

This alignment removes 138 dwelling units or the equivalent of 11% of the single-family residential units in West Bountiful.

This alignment splits the community, and will have high impacts to neighborhood cohesion. This alignment severs two existing subdivisions and also creates a north/south division at 1100 West.

This alignment would require development of new frontage roads between 2350 North and 2200 North, 2200 North and 1850 North, and 400 North to 550 North. This would cause impacts to travel patterns and accessibility.

There will be four highway crossings that will require continual maintenance that the city cannot afford.

The crossing street locations in existing residential neighborhoods is very intrusive due to the height of the facility. The height of the structures will cause visual impacts and reduce home values. The traffic noise will require placement of noise walls, which the city does not like. The traffic noise and noise walls are unnecessary intrusions into the community.

The 500 South Interchange eliminates the commercial frontage within the City boundaries. This removal would reduce the City's revenue by approximately \$38,000 or 13% of the annual property tax revenue.

The City's master plan includes a "Rails-to-Trails" adaptation for the D&RG. This alignment destroys the trail concept. This alignment would provide pedestrian access at 4 locations within the 2-mile width of the city, whereas the master plan provides eight access points.

### ***General Comments***

There are two existing Equestrian Centers with access to the Legacy Preferred Alternative trail system. These alternatives would impact this access.

The alternatives would have negative visual impacts to the Golf Course. This would in turn also create economic impacts. The City has concern for having a highway adjacent to the Golf Course.

The landscaped berm is very important to the City. They conceded to the location of the Legacy Preferred alternative because they were going to get a landscaped berm and trail facilities adjacent to the residential areas. This was considered mitigation for impacts.

These alternatives would have impacts to the power corridor, which would have impacts associated with relocations.

The city is concerned about the numerous large petroleum pipelines that would have to be relocated, such as Amoco, and Chevron.

There are access concerns for the West Bountiful Elementary School located east of 800 West. The city has concerns for the safety of the children crossing a D&RG alternative.

The City wants as much separation as possible between I-15 and a Legacy alternative for safety reasons.

The City's Master Plan was developed around the Legacy Parkway preferred alternative. The city would have to spend time redoing the master plan.

The City is concerned with impacts to storm drainage, and the cost of upgrading the existing infrastructure.

The City questioned the possible impacts to the “Frozen Tank” on the northwest corner of the Phillips refinery. There is an existing 30-foot deep frozen wall that could be impacted due to the settlement associated with the highway fill.

There is a new low to moderate income planned development “Berm Woods” and a residential development that would be impacted with the D&RG alternatives (see attached figure).

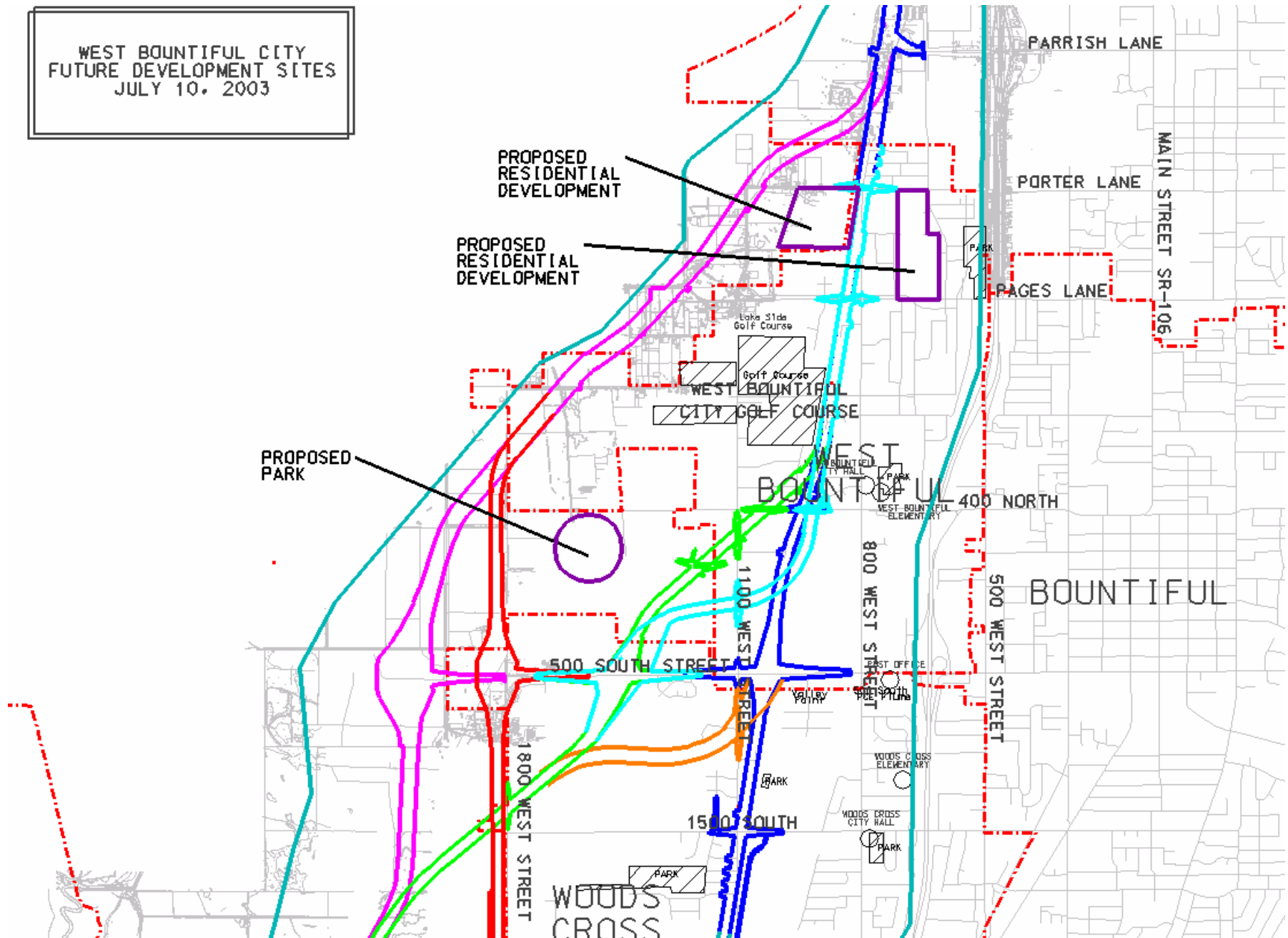
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WEST BOUNTIFUL CITY  
FUTURE DEVELOPMENT SITES  
JULY 10, 2003





# LEGACY PARKWAY PROJECT

## D&RG Technical Memorandum Community Impact Survey Minutes DM#6426

**Date/Time/Place** : July 8, 2003  
2:30-3:30 p.m.  
Centerville Public  
Works

**Distribution Date/Version** : July 18, 2003  
Final

### Centerville City Attendees:

Randy Randall  
Fred Campbell  
Aric Jensen

### HDR Attendees:

Bethany Shingleton (notes preparer)  
Terry Warner

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## PURPOSE

The purpose of this meeting was to solicit comments on the potential community and other environmental impacts associated with Legacy Parkway highway alignments within the Denver & Rio Grande (D&RG) Railroad Corridor.

## DISCUSSION

HDR presented a map showing conceptual D&RG alignments. HDR explained that because the Legacy Parkway (Great Salt Lake Regional Alignment) and the D&RG Regional Alignment are the same in the northern portion of the study area, the assumption is made that conceptual D&RG highway alignments would not follow the D&RG tracks but would be the same as the Preferred Legacy Parkway Alternative through Farmington and most of Centerville.

*Because of this assumption the discussion focused on the assumed D&RG right of way, which is narrower (234') than the Legacy Parkway (328') and lacks a berm, trail, and open median.*

Centerville City requested that the evaluation of the D&RG look at an alternative along the D&RG tracks through their city. An alignment would be located west of the Legacy Preferred alternative.

Centerville City has concerns of the handling of storm drainage with the narrower right of way. They expressed concern over limiting pipe sizes due to the Nature Preserve and question how the storm drainage will be handled.

Centerville City expressed its support for the trail within the Legacy Parkway right of way. The proposed trail is part of the trail master plan through the city. The city has developed plans for several trail access points. These access points would provide parking.

Centerville supports a trail within the Legacy right of way but would like consideration of moving the trail to the west side of the alignment for improved views. They would like the trail to run on the west side throughout the city, not just where it crosses over at 1250 West.

Centerville supports the trail as it accommodates both equestrians and multi-use users

Centerville questioned if commitments made with the Legacy Preferred alternative would still be met with any other alternatives?

Centerville wants to ensure that a frontage road is constructed between 1250 West and Glover's Lane along the west side of the alignment.

Centerville points out that several D&RG Alternatives would take away a commercial development from the city's tax base. This planned development is located at the very southern limits of the city. This parcel has already passed preliminary steps for approval and is in final approval stages for a commercial development. *See attached figure.*

Because Centerville has a limited commercial and industrial tax base, it would be concerned with the impacts an alternative would have to existing or planned commercial development.

Centerville questioned why an alternative is not evaluated that would follow the existing D&RG right of way.

Centerville would like landscaped berms through the city, yet understand they were placed in residential areas only.

Centerville City gave UDOT a copy of their "Shorelands Plan" trail plan.

Centerville has concerns about locating Legacy adjacent to the I-15, UPRR, and Commuter Rail Corridor. They are concerns that an accident or spill would close the north/south corridor. They feel there should be sufficient separation so that a hazardous material spill, train wreck or other accident would not close this corridor.

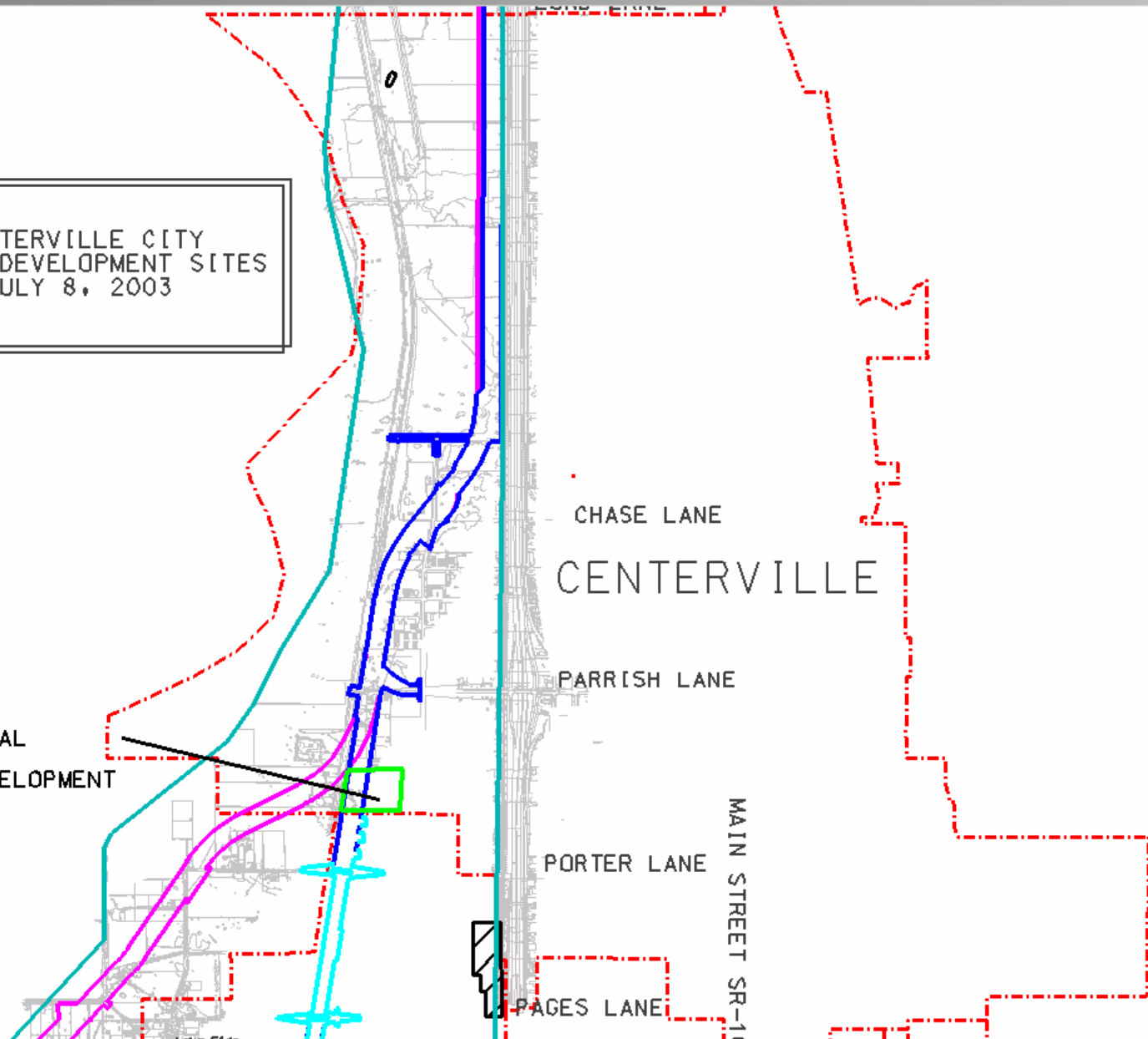
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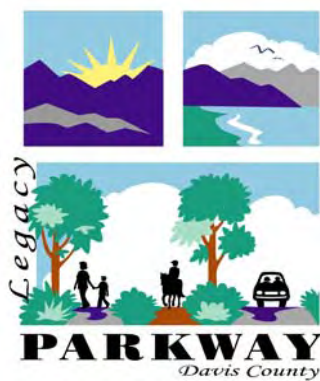
*These minutes reflect the understanding of the preparer. If an item needs clarification or correction, please comment to the preparer as soon as possible at 801-281-8892. The preparer will resolve the issue and distribute revised minutes.*

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CENTERVILLE CITY  
FUTURE DEVELOPMENT SITES  
JULY 8, 2003

SITE IN APPROVAL  
PROCESS FOR  
COMMERCAIL DEVELOPMENT





# LEGACY PARKWAY PROJECT

## D&RG Technical Memorandum Community Impact Survey Minutes DM#6431

**Date/Time/Place** : **July 8, 2003**  
**9:00-9:30 a.m.**  
**Farmington City Hall**

**Distribution Date/Version** : **July 21, 2003**  
**Final**

### Farmington City Attendees:

David Peterson  
Max Forbush

### HDR Attendees:

Bethany Shingleton  
Terry Warner (notes preparer)

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## PURPOSE

The purpose of this meeting was to solicit comments on the potential community and other environmental impacts associated with Legacy Parkway highway alignments within the Denver & Rio Grande (D&RG) Railroad Corridor.

## DISCUSSION

HDR presented a map showing conceptual D&RG alignments. HDR explained that because the Legacy Parkway (Great Salt Lake Regional Alignment) and the D&RG Regional Alignment are the same in the northern portion of the study area, the assumption is made that conceptual D&RG highway alignments would not follow the D&RG tracks but would be the same as the Preferred Legacy Parkway Alternative and would be adjacent to I-15 through Farmington.

*Because of this assumption the discussion focused on the assumed D&RG right of way, which is narrower (234') than the Legacy Parkway (328') and lacks a berm, trail and open median.*

Farmington City expressed its support for the trail within the Legacy Parkway right of way. In the existing location the trail would serve a new High school and developing residential areas north of Glovers Lane between 650 West and the Legacy Parkway. The trail would serve the Davis County Fairgrounds and a new park located east of the Fairgrounds, south of State Street. *See attached figure.*

Farmington supports a trail within the Legacy right of way because it is the ideal situation to serve the aforementioned facilities; alternative trail locations would not work as well.

Farmington supports the trail as it accommodates both equestrians and multi-use users.

Farmington City explained how the Legacy trail would tie into the extensive Farmington Trails System. Specifically, the Farmington Creek Trail which ties into the larger Great American Trail system.

Farmington pointed out that the Legacy trail (as an alternative mode of transportation) works well for Farmington because a number of its residents travel south to work in the Centerville and Bountiful area.

The trail would also serve Farmington by providing easy access to its sewer manholes that parallel the trail.

Farmington is very aesthetically minded and prefers the landscaped berm for noise mitigation. Would probably not accept a UDOT standard noise wall.

Farmington City gave UDOT a copy of their "Guide to Farmington Trails" booklet. The Farmington City Trail committee, a volunteer organization that helps promote trail use for both recreation and alternative modes of transportation, developed this booklet.

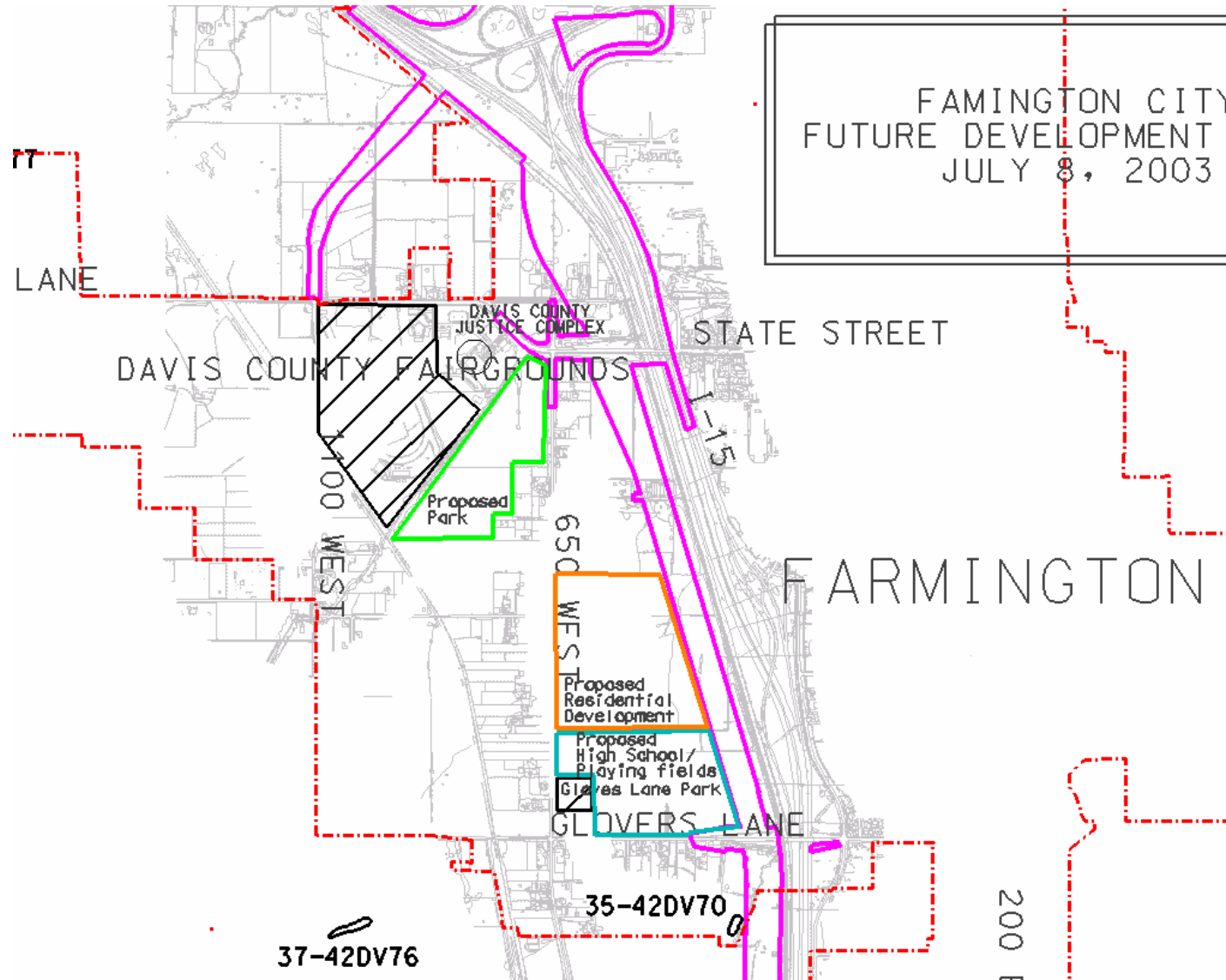
Farmington City gave UDOT a copy of their *Farmington Master Trails Map* and their *Farmington City Zoning Map* for use in evaluation of the right of way.

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*These minutes reflect the understanding of the preparer. If an item needs clarification or correction, please comment to the preparer as soon as possible at 801-281-8892. The preparer will resolve the issue and distribute revised minutes.*

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FAMINGTON CITY  
FUTURE DEVELOPMENT SITES  
JULY 8, 2003







# LEGACY PARKWAY PROJECT

## D&RG Technical Memorandum Community Impact Survey Minutes DM#6432

**Date/Time/Place** : **July 11, 2003**  
**8:30-9:00 a.m.**  
**Davis Court House**

**Distribution Date/Version** : **July 21, 2003**  
**Final**

### **Davis County Attendees:**

Barry Burton (Assistant Director, Community and Economic Development)

### **HDR Attendees:**

Bethany Shingleton, Terry Warner (notes preparer)

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## **PURPOSE**

The purpose of this meeting was to solicit comments on the potential community and other environmental impacts associated with Legacy Parkway highway alignments within the Denver & Rio Grande (D&RG) Railroad Corridor.

## **DISCUSSION**

HDR presented a map showing conceptual D&RG alignments.

Davis County owns some undeveloped property north of Lund Lane that will eventually be annexed into Farmington.

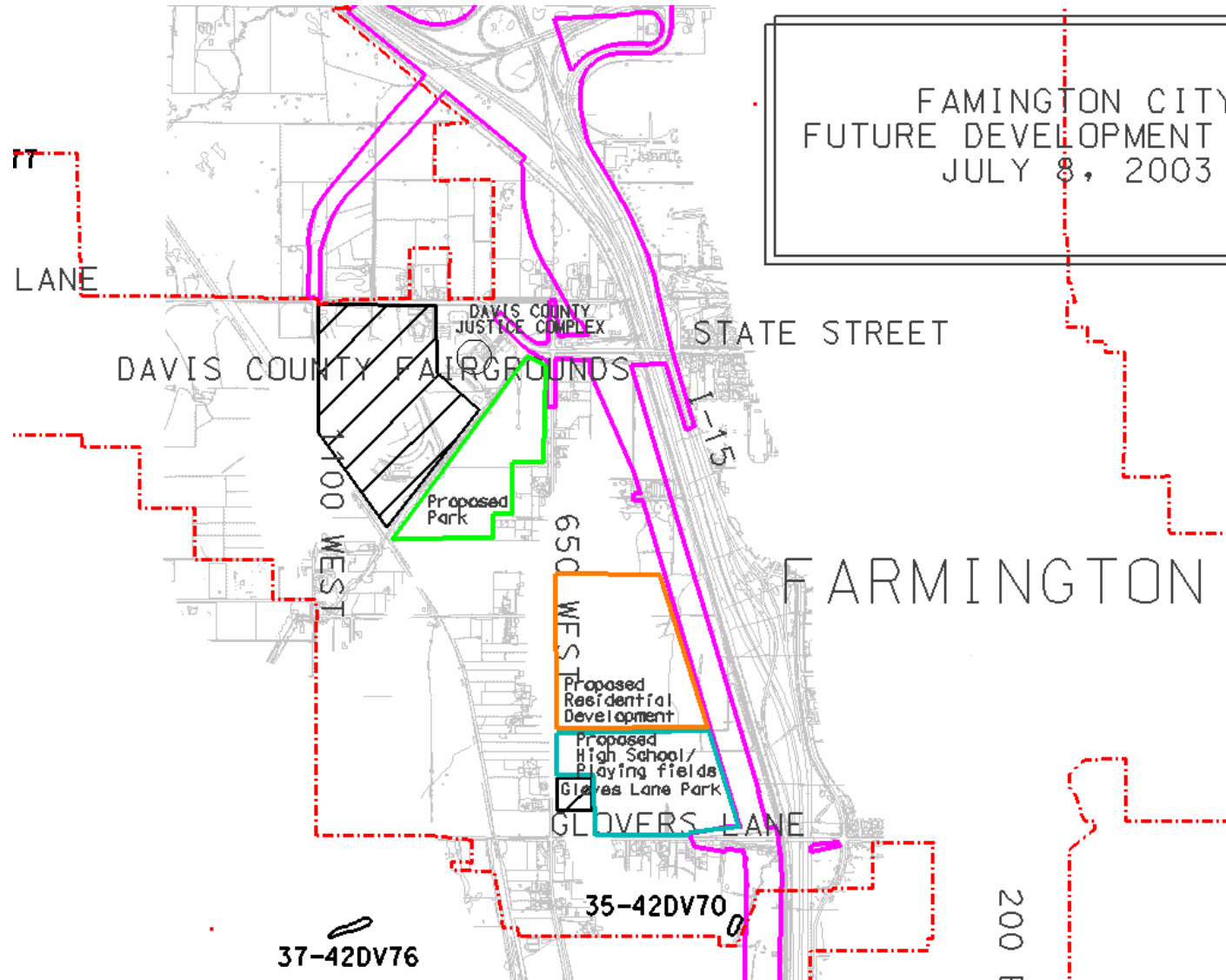
Barry expressed the tremendous impacts to homes and businesses that would result from the D&RG alternative.

Barry stated the Redwood Road alignment may have potential but not as good as the Legacy Preferred Alternative because you do not get the buffering effect to development and would hamper preservation efforts of the Great Salt Lake shoreline. The Redwood road Alignment would not gain much given the impacts to area businesses.

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FAMINGTON CITY  
FUTURE DEVELOPMENT SITES  
JULY 8, 2003





# LEGACY PARKWAY PROJECT

## D&RG Technical Memorandum Community Impact Survey Minutes DM#6436

**Date/Time/Place :** July 15, 2003  
8:00-9:00 a.m.  
North Salt Lake  
City Offices  
**Distribution Date/Version :** July 15, 2003  
Final

### North Salt Lake Attendees:

Mayor Kay Briggs, Rod Wood, Paul Otteson, Collin Wood

### HDR Attendees:

Bethany Shingleton, Terry Warner (notes preparer)

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## PURPOSE

The purpose of this meeting was to solicit comments on the potential community and other environmental impacts associated with Legacy Parkway highway alignments within the Denver & Rio Grande (D&RG) Railroad Corridor.

*Note: NSL-North Salt Lake*

## DISCUSSION

HDR presented a map showing conceptual D&RG alignments.

NSL identified impacts of the DRG Alignments to 2 of its main municipal water wells that produce a lot of water. Also discussed the cost implications of relocating main water lines and other major utilities that blanket the area.

NSL discussed the business impacts associated with the D&RG alignments. **Alignment A1** would displace several of NSL largest employers (Albertsons [largest employer], Koch Asphalt, Utah Paperbox, BMW motorcycles, Shamrock Plumbing). Alignment A1 would also displace several businesses in the Northwood business park located west of Redwood and north of Center St. These business impacts would eliminate the majority of NSL's existing tax base.

Alignment A1 would also displace the Lifeline building, which helps disadvantaged youths. See attached figure.

**Alignment A2** would severely impact the planned Hughes and Fox Borough developments. The Fox Borough development is a mixed-use development (under construction and expect to see homes within the next few months) with homes, parks (5 pocket parks and 1 large park), commercial along Redwood Road, a planned elementary school, and church. The Fox Borough development is NSL's response to a housing plan, which requires a certain number of low-income housing. 240 units of low to moderate income housing units are planned, including 12 HUD supported "transitional housing units".

The **Redwood Road alignment** would impact the commercial aspect of the Fox borough development and would make the entire development infeasible. The impact would eliminate a large portion of NSL expected future tax base.

Fox Borough will stimulate other commercial developments north along Redwood.

D&RG alignments would bisect the commercial and industrial community of NSL and disrupt access routes. A major factor in locating businesses is the accessibility of transportation facilities. Any increase in travel distance would be a severe negative impact to transport or hauling related businesses. NSL feels there could be some indirect impact by some businesses moving out because of restricted access.

D&RG alignments are inconstant with NSLs general plan and would destroy 40 years of planning efforts.

NSL supports a trail system. The Fox Borough development includes trails which tie into the Legacy Preferred Alternative trail. NSLs trails captured in the Davis County Shoreline plan.

NSL is committed to preservation of open space. They need a solid commercial and industrial tax base to create recreation and preserve open areas. Eliminating a large portion of the tax base would make it difficult for the city to be viable.

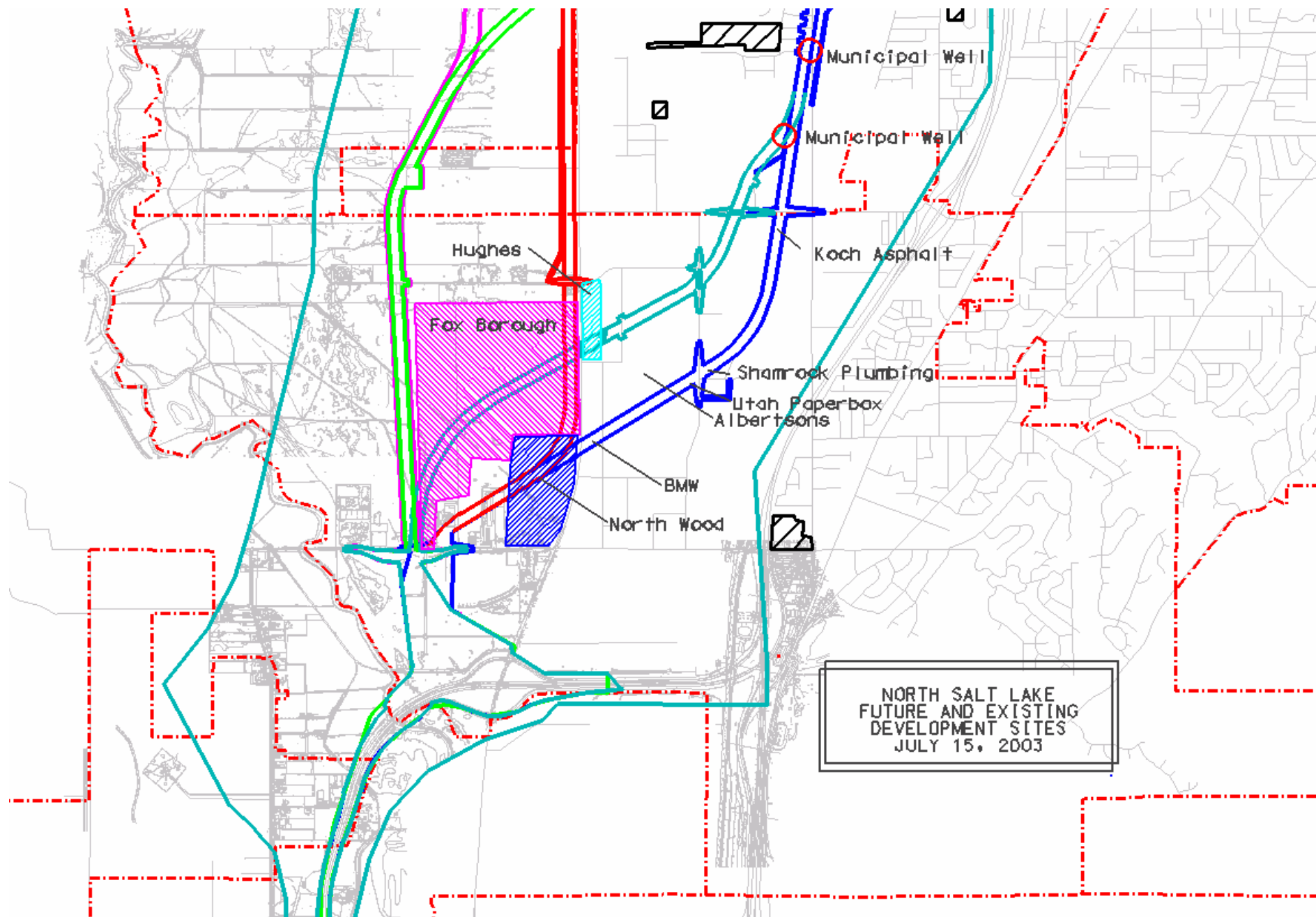
Without Legacy Parkway, the open space will start to fill up with industrial/comercial type developments and the wetlands would be encroached upon. NSL supports Legacy Parkway as the buffer to development. NSL could better control development types with Legacy Parkway and the proposed Legacy Nature Preserve. NSL fears the proposed land for the Nature Preserve would become a junk yard.

Waiting for Legacy resolution to change zoning of Legacy Nature Preserve properties from MD-manufacturing/distribution to open space.

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*These minutes reflect the understanding of the preparer. If an item needs clarification or correction, please comment to the preparer as soon as possible at 801-281-8892. The preparer will resolve the issue and distribute revised minutes.*

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## APPENDIX C

### ALIGNMENT SPECIFIC COST ESTIMATES

(80 to 95 m [264 to 312ft] Right of Way Width)

| Denver & Rio Grande Alternative DRG1       |                        |                         |                         |                        |                         |                     |
|--|------------------------|-------------------------|-------------------------|------------------------|-------------------------|---------------------|
| ITEM                                       | COST                   |                         |                         |                        |                         | TOTAL<br>(MILLIONS) |
|  | Link1                  | Link2                   | Link3                   | Link4                  | Link5                   |                     |
| Concrete Pavement (1)                      | \$3,304,744            | \$4,959,910             | \$9,851,084             | \$10,866,002           | \$8,050,775             | \$37.04             |
| Asphalt Pavement (2)                       | \$228,770              | \$872,400               | \$1,332,300             | \$540,750              | \$2,582,296             | \$5.56              |
| Trail Pavement (3)                         | \$0                    | \$145,320               | \$189,000               | \$218,736              | \$0                     | \$0.56              |
| Trail Mulch (4)                            | \$0                    | \$3,460                 | \$4,500                 | \$5,208                | \$0                     | \$0.02              |
| Earthwork (5)                              | \$14,600,000           | \$6,900,000             | \$10,700,000            | \$8,300,000            | \$18,800,000            | \$59.30             |
| Barrier (6)                                | \$980,982              | \$259,840               | \$389,760               | \$194,880              | \$1,327,066             | \$3.16              |
| Noise Walls (7)                            | \$0                    | \$1,285,550             | \$2,334,500             | \$0                    | \$0                     | \$3.63              |
| Retaining Walls (8)                        | \$621,432              | \$2,931,250             | \$5,111,750             | \$875,000              | \$12,440,356            | \$21.98             |
| Structures (9)                             | \$9,522,340            | \$9,763,020             | \$23,797,361            | \$6,712,076            | \$45,585,413            | \$95.39             |
| Striping (10)                              | \$155,280              | \$22,263                | \$37,313                | \$39,895               | \$412,752               | \$0.67              |
| Fence (11)                                 | \$777,615              | \$374,912               | \$535,529               | \$568,525              | \$606,851               | \$2.87              |
| Drainage (12)                              | \$964,696              | \$2,029,571             | \$3,738,091             | \$3,656,376            | \$2,798,256             | \$13.19             |
| Excavation (13)                            | \$117,623              | \$155,840               | \$219,977               | \$90,984               | \$321,962               | \$0.91              |
| Demolition (14)                            | \$315,963              | \$65,438                | \$186,115               | \$28,611               | \$1,065,007             | \$1.67              |
| Traffic Control (15)                       | \$475,861              | \$51,808                | \$67,380                | \$59,499               | \$1,426,322             | \$2.09              |
| Landscaping (16)                           | \$2,829,408            | \$825,224               | \$1,073,268             | \$1,232,065            | \$2,078,752             | \$8.04              |
| Lighting (17)                              | \$157,823              | \$0                     | \$129,289               | \$128,294              | \$1,214,615             | \$1.64              |
| Petroleum Pipelines Relocations (18)       | \$259,439              | \$921,726               | \$3,360,227             | \$1,893,905            | \$0                     | \$6.44              |
| ATMS (19)                                  | \$1,140,936            | \$0                     | \$598,142               | \$1,202,006            | \$1,958,849             | \$4.90              |
| Hazardous Waste Clean-up (Refineries) (22) | \$0                    | \$1,418,113             | \$1,692,407             | \$0                    | \$0                     | \$3.12              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0                    | \$0                     | \$0                     | \$0                    | \$0                     | \$0.00              |
| <b>SUBTOTAL</b>                            | <b>\$36,452,911.93</b> | <b>\$32,985,644.69</b>  | <b>\$65,347,991.04</b>  | <b>\$36,612,813.19</b> | <b>\$100,669,272.10</b> | <b>\$272.07</b>     |
| ROW (20)                                   | \$7,252,216            | \$52,100,646            | \$86,518,518            | \$21,867,558           | \$9,002,001             | \$176.75            |
| Wetlands Mitigation (21)                   | \$4,328,947            | \$1,570,175             | \$5,015,351             | \$9,087,719            | \$3,114,035             | \$23.12             |
| Signing 1%                                 | \$364,529              | \$329,856               | \$653,480               | \$366,128              | \$1,006,693             | \$2.73              |
| Utilities 8% (23)                          | \$2,916,233            | \$2,638,852             | \$5,227,839             | \$2,929,025            | \$8,053,542             | \$21.77             |
| Misc. Items 5%                             | \$1,822,646            | \$1,649,282             | \$3,267,400             | \$1,830,641            | \$5,033,464             | \$13.61             |
| Mobilization 7%                            | \$2,551,704            | \$2,308,995             | \$4,574,359             | \$2,562,897            | \$7,046,849             | \$19.05             |
| Contingencies 15%                          | \$5,467,937            | \$4,947,847             | \$9,802,199             | \$5,491,922            | \$15,100,391            | \$40.82             |
| Engineering 15%                            | \$5,467,937            | \$4,947,847             | \$9,802,199             | \$5,491,922            | \$15,100,391            | \$40.82             |
| <b>TOTAL</b>                               | <b>\$66,625,060.38</b> | <b>\$103,479,144.93</b> | <b>\$190,209,335.35</b> | <b>\$86,240,625.22</b> | <b>\$164,126,636.96</b> | <b>\$610.68</b>     |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |



| Denver & Rio Grande Alternative DRG2       |                        |                         |                         |                        |                         |                     |
|--|------------------------|-------------------------|-------------------------|------------------------|-------------------------|---------------------|
| ITEM                                       | COST                   |                         |                         |                        |                         | TOTAL<br>(MILLIONS) |
|  | Link1                  | Link2                   | Link3                   | Link4                  | Link5                   |                     |
| Concrete Pavement (1)                      | \$3,304,744            | \$4,959,910             | \$9,851,084             | \$10,866,002           | \$8,050,775             | \$37.04             |
| Asphalt Pavement (2)                       | \$228,770              | \$577,800               | \$1,332,300             | \$540,750              | \$2,582,296             | \$5.27              |
| Trail Pavement (3)                         | \$0                    | \$145,320               | \$189,000               | \$218,736              | \$0                     | \$0.56              |
| Trail Mulch (4)                            | \$0                    | \$3,460                 | \$4,500                 | \$5,208                | \$0                     | \$0.02              |
| Earthwork (5)                              | \$14,600,000           | \$5,800,000             | \$10,700,000            | \$8,300,000            | \$18,800,000            | \$58.20             |
| Barrier (6)                                | \$980,982              | \$259,840               | \$389,760               | \$194,880              | \$1,327,066             | \$3.16              |
| Noise Walls (7)                            | \$0                    | \$1,887,900             | \$2,334,500             | \$0                    | \$0                     | \$4.23              |
| Retaining Walls (8)                        | \$621,432              | \$2,931,250             | \$5,111,750             | \$875,000              | \$12,440,356            | \$21.98             |
| Structures (9)                             | \$9,522,340            | \$9,763,020             | \$23,797,361            | \$6,712,076            | \$45,585,413            | \$95.39             |
| Striping (10)                              | \$155,280              | \$22,263                | \$37,313                | \$39,895               | \$412,752               | \$0.67              |
| Fence (11)                                 | \$777,615              | \$341,277               | \$535,529               | \$568,525              | \$606,851               | \$2.83              |
| Drainage (12)                              | \$964,696              | \$1,860,027             | \$3,738,091             | \$3,656,376            | \$2,798,256             | \$13.02             |
| Excavation (13)                            | \$117,623              | \$105,204               | \$219,977               | \$90,984               | \$321,962               | \$0.86              |
| Demolition (14)                            | \$315,963              | \$48,972                | \$186,115               | \$28,611               | \$1,065,007             | \$1.65              |
| Traffic Control (15)                       | \$475,861              | \$51,808                | \$67,380                | \$59,499               | \$1,426,322             | \$2.09              |
| Landscaping (16)                           | \$2,829,408            | \$825,224               | \$1,073,268             | \$1,232,065            | \$2,078,752             | \$8.04              |
| Lighting (17)                              | \$157,823              | \$0                     | \$129,289               | \$128,294              | \$1,214,615             | \$1.64              |
| Petroleum Pipelines Relocations (18)       | \$259,439              | \$291,382               | \$3,360,227             | \$1,893,905            | \$0                     | \$5.81              |
| ATMS (19)                                  | \$1,140,936            | \$0                     | \$598,142               | \$1,202,006            | \$1,958,849             | \$4.90              |
| Hazardous Waste Clean-up (Refineries) (22) | \$0                    | \$168,166               | \$1,692,407             | \$0                    | \$0                     | \$1.87              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0                    | \$0                     | \$0                     | \$0                    | \$0                     | \$0.00              |
| <b>SUBTOTAL</b>                            | <b>\$36,452,911.93</b> | <b>\$30,042,821.83</b>  | <b>\$65,347,991.04</b>  | <b>\$36,612,813.19</b> | <b>\$100,669,272.10</b> | <b>\$269.13</b>     |
| ROW (20)                                   | \$7,252,216            | \$51,359,707            | \$86,518,518            | \$21,867,558           | \$9,002,001             | \$176.00            |
| Wetlands Mitigation (21)                   | \$4,328,947            | \$3,942,982             | \$5,015,351             | \$9,087,719            | \$3,114,035             | \$25.49             |
| Signing 1%                                 | \$364,529              | \$300,428               | \$653,480               | \$366,128              | \$1,006,693             | \$2.70              |
| Utilities 8% (23)                          | \$2,916,233            | \$2,403,426             | \$5,227,839             | \$2,929,025            | \$8,053,542             | \$21.54             |
| Misc. Items 5%                             | \$1,822,646            | \$1,502,141             | \$3,267,400             | \$1,830,641            | \$5,033,464             | \$13.46             |
| Mobilization 7%                            | \$2,551,704            | \$2,102,998             | \$4,574,359             | \$2,562,897            | \$7,046,849             | \$18.84             |
| Contingencies 15%                          | \$5,467,937            | \$4,506,423             | \$9,802,199             | \$5,491,922            | \$15,100,391            | \$40.37             |
| Engineering 15%                            | \$5,467,937            | \$4,506,423             | \$9,802,199             | \$5,491,922            | \$15,100,391            | \$40.37             |
| <b>TOTAL</b>                               | <b>\$66,625,060.38</b> | <b>\$100,667,350.41</b> | <b>\$190,209,335.35</b> | <b>\$86,240,625.22</b> | <b>\$164,126,636.96</b> | <b>\$607.87</b>     |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG3       |                        |                        |                         |                        |                         |                     |
|--|------------------------|------------------------|-------------------------|------------------------|-------------------------|---------------------|
| ITEM                                       | COST                   |                        |                         |                        |                         | TOTAL<br>(MILLIONS) |
|  | Link1                  | Link2                  | Link3                   | Link4                  | Link5                   |                     |
| Concrete Pavement (1)                      | \$3,304,744            | \$3,807,376            | \$11,565,550            | \$10,866,002           | \$8,050,775             | \$37.60             |
| Asphalt Pavement (2)                       | \$228,770              | \$21,000               | \$1,069,680             | \$540,750              | \$2,582,296             | \$4.45              |
| Trail Pavement (3)                         | \$0                    | \$111,552              | \$239,232               | \$218,736              | \$0                     | \$0.57              |
| Trail Mulch (4)                            | \$0                    | \$2,656                | \$5,696                 | \$5,208                | \$0                     | \$0.02              |
| Earthwork (5)                              | \$14,600,000           | \$3,400,000            | \$13,100,000            | \$8,300,000            | \$18,800,000            | \$58.20             |
| Barrier (6)                                | \$980,982              | \$0                    | \$519,680               | \$194,880              | \$1,327,066             | \$3.03              |
| Noise Walls (7)                            | \$0                    | \$0                    | \$2,103,500             | \$0                    | \$0                     | \$2.11              |
| Retaining Walls (8)                        | \$621,432              | \$0                    | \$6,552,000             | \$875,000              | \$12,440,356            | \$20.49             |
| Structures (9)                             | \$9,522,340            | \$0                    | \$29,492,456            | \$6,712,076            | \$45,585,413            | \$91.32             |
| Striping (10)                              | \$155,280              | \$14,940               | \$45,440                | \$39,895               | \$412,752               | \$0.67              |
| Fence (11)                                 | \$777,615              | \$261,353              | \$643,072               | \$568,525              | \$606,851               | \$2.86              |
| Drainage (12)                              | \$964,696              | \$1,241,632            | \$4,074,832             | \$3,656,376            | \$2,798,256             | \$12.74             |
| Excavation (13)                            | \$117,623              | \$3,675                | \$167,825               | \$90,984               | \$321,962               | \$0.71              |
| Demolition (14)                            | \$315,963              | \$13,914               | \$162,873               | \$28,611               | \$1,065,007             | \$1.59              |
| Traffic Control (15)                       | \$475,861              | \$30,100               | \$81,312                | \$59,499               | \$1,426,322             | \$2.08              |
| Landscaping (16)                           | \$2,829,408            | \$623,281              | \$1,295,184             | \$1,232,065            | \$2,078,752             | \$8.06              |
| Lighting (17)                              | \$157,823              | \$0                    | \$129,289               | \$128,294              | \$1,214,615             | \$1.64              |
| Petroleum Pipelines Relocations (18)       | \$259,439              | \$0                    | \$2,720,517             | \$1,893,905            | \$0                     | \$4.88              |
| ATMS (19)                                  | \$1,140,936            | \$0                    | \$598,142               | \$1,202,006            | \$1,958,849             | \$4.90              |
| Hazardous Waste Clean-up (Refineries) (22) | \$0                    | \$0                    | \$1,449,542             | \$0                    | \$0                     | \$1.45              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0                    | \$0                    | \$0                     | \$0                    | \$0                     | \$0.00              |
| <b>SUBTOTAL</b>                            | <b>\$36,452,911.93</b> | <b>\$9,531,478.75</b>  | <b>\$76,015,821.11</b>  | <b>\$36,612,813.19</b> | <b>\$100,669,272.10</b> | <b>\$259.29</b>     |
| ROW (20)                                   | \$7,252,216            | \$5,769,824            | \$72,108,401            | \$21,867,558           | \$9,002,001             | \$116.00            |
| Wetlands Mitigation (21)                   | \$4,328,947            | \$2,026,316            | \$5,690,789             | \$9,087,719            | \$3,114,035             | \$24.25             |
|  |                        |                        |                         |                        |                         |                     |
| Signing 1%                                 | \$364,529              | \$95,315               | \$760,158               | \$366,128              | \$1,006,693             | \$2.60              |
| Utilities 8% (23)                          | \$2,916,233            | \$762,518              | \$6,081,266             | \$2,929,025            | \$8,053,542             | \$20.75             |
| Misc. Items 5%                             | \$1,822,646            | \$476,574              | \$3,800,791             | \$1,830,641            | \$5,033,464             | \$12.97             |
| Mobilization 7%                            | \$2,551,704            | \$667,204              | \$5,321,107             | \$2,562,897            | \$7,046,849             | \$18.15             |
| Contingencies 15%                          | \$5,467,937            | \$1,429,722            | \$11,402,373            | \$5,491,922            | \$15,100,391            | \$38.90             |
| Engineering 15%                            | \$5,467,937            | \$1,429,722            | \$11,402,373            | \$5,491,922            | \$15,100,391            | \$38.90             |
| <b>TOTAL</b>                               | <b>\$66,625,060.38</b> | <b>\$22,188,672.70</b> | <b>\$192,583,080.36</b> | <b>\$86,240,625.22</b> | <b>\$164,126,636.96</b> | <b>\$531.76</b>     |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG4       |                        |                        |                         |                        |                         |                     |
|--|------------------------|------------------------|-------------------------|------------------------|-------------------------|---------------------|
| ITEM                                       | COST                   |                        |                         |                        |                         | TOTAL<br>(MILLIONS) |
|  | Link1                  | Link2                  | Link3                   | Link4                  | Link5                   |                     |
| Concrete Pavement (1)                      | \$3,304,744            | \$3,807,376            | \$11,324,722            | \$10,866,002           | \$8,050,775             | \$37.36             |
| Asphalt Pavement (2)                       | \$228,770              | \$21,000               | \$1,217,475             | \$540,750              | \$2,582,296             | \$4.60              |
| Trail Pavement (3)                         | \$0                    | \$111,552              | \$232,176               | \$218,736              | \$0                     | \$0.57              |
| Trail Mulch (4)                            | \$0                    | \$2,656                | \$5,528                 | \$5,208                | \$0                     | \$0.02              |
| Earthwork (5)                              | \$14,600,000           | \$3,400,000            | \$12,600,000            | \$8,300,000            | \$18,800,000            | \$57.70             |
| Barrier (6)                                | \$980,982              | \$0                    | \$584,640               | \$194,880              | \$1,327,066             | \$3.09              |
| Noise Walls (7)                            | \$0                    | \$0                    | \$1,962,800             | \$0                    | \$0                     | \$1.97              |
| Retaining Walls (8)                        | \$621,432              | \$0                    | \$5,733,000             | \$875,000              | \$12,440,356            | \$19.67             |
| Structures (9)                             | \$9,522,340            | \$0                    | \$20,949,813            | \$6,712,076            | \$45,585,413            | \$82.77             |
| Striping (10)                              | \$155,280              | \$14,940               | \$44,495                | \$39,895               | \$412,752               | \$0.67              |
| Fence (11)                                 | \$777,615              | \$261,353              | \$610,243               | \$568,525              | \$606,851               | \$2.83              |
| Drainage (12)                              | \$964,696              | \$1,241,632            | \$3,800,255             | \$3,656,376            | \$2,798,256             | \$12.47             |
| Excavation (13)                            | \$117,623              | \$3,675                | \$164,150               | \$90,984               | \$321,962               | \$0.70              |
| Demolition (14)                            | \$315,963              | \$13,914               | \$152,783               | \$28,611               | \$1,065,007             | \$1.58              |
| Traffic Control (15)                       | \$475,861              | \$30,100               | \$81,312                | \$59,499               | \$1,426,322             | \$2.08              |
| Landscaping (16)                           | \$2,829,408            | \$623,281              | \$1,295,184             | \$1,232,065            | \$2,078,752             | \$8.06              |
| Lighting (17)                              | \$157,823              | \$0                    | \$129,289               | \$128,294              | \$1,214,615             | \$1.64              |
| Petroleum Pipelines Relocations (18)       | \$259,439              | \$0                    | \$3,072,960             | \$1,893,905            | \$0                     | \$5.23              |
| ATMS (19)                                  | \$1,140,936            | \$0                    | \$598,142               | \$1,202,006            | \$1,958,849             | \$4.90              |
| Hazardous Waste Clean-up (Refineries) (22) | \$0                    | \$0                    | \$0                     | \$0                    | \$0                     | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0                    | \$0                    | \$0                     | \$0                    | \$0                     | \$0.00              |
| <b>SUBTOTAL</b>                            | <b>\$36,452,911.93</b> | <b>\$9,531,478.75</b>  | <b>\$64,558,966.62</b>  | <b>\$36,612,813.19</b> | <b>\$100,669,272.10</b> | <b>\$247.83</b>     |
| ROW (20)                                   | \$7,252,216            | \$5,769,824            | \$74,108,401            | \$21,867,558           | \$9,002,001             | \$118.00            |
| Wetlands Mitigation (21)                   | \$4,328,947            | \$2,026,316            | \$5,473,684             | \$9,087,719            | \$3,114,035             | \$24.04             |
| Signing 1%                                 | \$364,529              | \$95,315               | \$645,590               | \$366,128              | \$1,006,693             | \$2.48              |
| Utilities 8% (23)                          | \$2,916,233            | \$762,518              | \$5,164,717             | \$2,929,025            | \$8,053,542             | \$19.83             |
| Misc. Items 5%                             | \$1,822,646            | \$476,574              | \$3,227,948             | \$1,830,641            | \$5,033,464             | \$12.40             |
| Mobilization 7%                            | \$2,551,704            | \$667,204              | \$4,519,128             | \$2,562,897            | \$7,046,849             | \$17.35             |
| Contingencies 15%                          | \$5,467,937            | \$1,429,722            | \$9,683,845             | \$5,491,922            | \$15,100,391            | \$37.18             |
| Engineering 15%                            | \$5,467,937            | \$1,429,722            | \$9,683,845             | \$5,491,922            | \$15,100,391            | \$37.18             |
| <b>TOTAL</b>                               | <b>\$66,625,060.38</b> | <b>\$22,188,672.70</b> | <b>\$177,066,124.81</b> | <b>\$86,240,625.22</b> | <b>\$164,126,636.96</b> | <b>\$516.25</b>     |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG5       |                        |                        |                         |                        |                         |                     |
|--|------------------------|------------------------|-------------------------|------------------------|-------------------------|---------------------|
| ITEM                                       | COST                   |                        |                         |                        |                         | TOTAL<br>(MILLIONS) |
|  | Link1                  | Link2                  | Link3                   | Link4                  | Link5                   |                     |
| Concrete Pavement (1)                      | \$3,304,744            | \$3,807,376            | \$11,089,628            | \$10,866,002           | \$8,050,775             | \$37.12             |
| Asphalt Pavement (2)                       | \$228,770              | \$21,000               | \$1,323,900             | \$540,750              | \$2,582,296             | \$4.70              |
| Trail Pavement (3)                         | \$0                    | \$111,552              | \$225,288               | \$218,736              | \$0                     | \$0.56              |
| Trail Mulch (4)                            | \$0                    | \$2,656                | \$5,364                 | \$5,208                | \$0                     | \$0.02              |
| Earthwork (5)                              | \$14,600,000           | \$3,400,000            | \$11,600,000            | \$8,300,000            | \$18,800,000            | \$56.70             |
| Barrier (6)                                | \$980,982              | \$0                    | \$519,680               | \$194,880              | \$1,327,066             | \$3.03              |
| Noise Walls (7)                            | \$0                    | \$0                    | \$2,156,000             | \$0                    | \$0                     | \$2.16              |
| Retaining Walls (8)                        | \$621,432              | \$0                    | \$4,635,750             | \$875,000              | \$12,440,356            | \$18.58             |
| Structures (9)                             | \$9,522,340            | \$0                    | \$19,526,040            | \$6,712,076            | \$45,585,413            | \$81.35             |
| Striping (10)                              | \$155,280              | \$14,940               | \$43,573                | \$39,895               | \$412,752               | \$0.67              |
| Fence (11)                                 | \$777,615              | \$261,353              | \$613,737               | \$568,525              | \$606,851               | \$2.83              |
| Drainage (12)                              | \$964,696              | \$1,241,632            | \$3,928,849             | \$3,656,376            | \$2,798,256             | \$12.59             |
| Excavation (13)                            | \$117,623              | \$3,675                | \$182,350               | \$90,984               | \$321,962               | \$0.72              |
| Demolition (14)                            | \$315,963              | \$13,914               | \$164,561               | \$28,611               | \$1,065,007             | \$1.59              |
| Traffic Control (15)                       | \$475,861              | \$30,100               | \$81,312                | \$59,499               | \$1,426,322             | \$2.08              |
| Landscaping (16)                           | \$2,829,408            | \$623,281              | \$1,295,184             | \$1,232,065            | \$2,078,752             | \$8.06              |
| Lighting (17)                              | \$157,823              | \$0                    | \$129,289               | \$128,294              | \$1,214,615             | \$1.64              |
| Petroleum Pipelines Relocations (18)       | \$259,439              | \$0                    | \$2,642,517             | \$1,893,905            | \$0                     | \$4.80              |
| ATMS (19)                                  | \$1,140,936            | \$0                    | \$598,142               | \$1,202,006            | \$1,958,849             | \$4.90              |
| Hazardous Waste Clean-up (Refineries) (22) | \$0                    | \$0                    | \$0                     | \$0                    | \$0                     | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0                    | \$0                    | \$0                     | \$0                    | \$0                     | \$0.00              |
| <b>SUBTOTAL</b>                            | <b>\$36,452,911.93</b> | <b>\$9,531,478.75</b>  | <b>\$60,761,162.93</b>  | <b>\$36,612,813.19</b> | <b>\$100,669,272.10</b> | <b>\$244.03</b>     |
| ROW (20)                                   | \$7,252,216            | \$5,769,824            | \$79,108,401            | \$21,867,558           | \$9,002,001             | \$123.00            |
| Wetlands Mitigation (21)                   | \$4,328,947            | \$2,026,316            | \$4,690,789             | \$9,087,719            | \$3,114,035             | \$23.25             |
|  |                        |                        |                         |                        |                         |                     |
| Signing 1%                                 | \$364,529              | \$95,315               | \$607,612               | \$366,128              | \$1,006,693             | \$2.45              |
| Utilities 8% (23)                          | \$2,916,233            | \$762,518              | \$4,860,893             | \$2,929,025            | \$8,053,542             | \$19.53             |
| Misc. Items 5%                             | \$1,822,646            | \$476,574              | \$3,038,058             | \$1,830,641            | \$5,033,464             | \$12.21             |
| Mobilization 7%                            | \$2,551,704            | \$667,204              | \$4,253,281             | \$2,562,897            | \$7,046,849             | \$17.09             |
| Contingencies 15%                          | \$5,467,937            | \$1,429,722            | \$9,114,174             | \$5,491,922            | \$15,100,391            | \$36.61             |
| Engineering 15%                            | \$5,467,937            | \$1,429,722            | \$9,114,174             | \$5,491,922            | \$15,100,391            | \$36.61             |
| <b>TOTAL</b>                               | <b>\$66,625,060.38</b> | <b>\$22,188,672.70</b> | <b>\$175,548,546.50</b> | <b>\$86,240,625.22</b> | <b>\$164,126,636.96</b> | <b>\$514.73</b>     |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Concept Alternative E                      |                        |                        |                        |                        |                         |                     |
|--|------------------------|------------------------|------------------------|------------------------|-------------------------|---------------------|
| ITEM                                       | COST                   |                        |                        |                        |                         | TOTAL<br>(MILLIONS) |
|  | Link1                  | Link2                  | Link3                  | Link4                  | Link5                   |                     |
| Concrete Pavement (1)                      | \$3,304,744            | \$3,807,376            | \$11,267,382           | \$10,866,002           | \$8,050,775             | \$37.30             |
| Asphalt Pavement (2)                       | \$228,770              | \$21,000               | \$2,064,075            | \$540,750              | \$2,582,296             | \$5.44              |
| Trail Pavement (3)                         | \$0                    | \$111,552              | \$230,496              | \$218,736              | \$0                     | \$0.57              |
| Trail Mulch (4)                            | \$0                    | \$2,656                | \$5,488                | \$5,208                | \$0                     | \$0.02              |
| Earthwork (5)                              | \$14,600,000           | \$3,400,000            | \$7,900,000            | \$8,300,000            | \$18,800,000            | \$53.00             |
| Barrier (6)                                | \$980,982              | \$0                    | \$129,920              | \$194,880              | \$1,327,066             | \$2.64              |
| Noise Walls (7)                            | \$0                    | \$0                    | \$0                    | \$0                    | \$0                     | \$0.00              |
| Retaining Walls (8)                        | \$621,432              | \$0                    | \$0                    | \$875,000              | \$12,440,356            | \$13.94             |
| Structures (9)                             | \$9,522,340            | \$0                    | \$5,039,296            | \$6,712,076            | \$45,585,413            | \$66.86             |
| Striping (10)                              | \$155,280              | \$14,940               | \$40,070               | \$39,895               | \$412,752               | \$0.67              |
| Fence (11)                                 | \$777,615              | \$261,353              | \$587,215              | \$568,525              | \$606,851               | \$2.81              |
| Drainage (12)                              | \$964,696              | \$1,241,632            | \$2,541,122            | \$3,656,376            | \$2,798,256             | \$11.21             |
| Excavation (13)                            | \$117,623              | \$3,675                | \$40,900               | \$90,984               | \$321,962               | \$0.58              |
| Demolition (14)                            | \$315,963              | \$13,914               | \$43,064               | \$28,611               | \$1,065,007             | \$1.47              |
| Traffic Control (15)                       | \$475,861              | \$30,100               | \$62,548               | \$59,499               | \$1,426,322             | \$2.06              |
| Landscaping (16)                           | \$2,829,408            | \$623,281              | \$1,295,184            | \$1,232,065            | \$2,078,752             | \$8.06              |
| Lighting (17)                              | \$157,823              | \$0                    | \$129,289              | \$128,294              | \$1,214,615             | \$1.64              |
| Petroleum Pipelines Relocations (18)       | \$259,439              | \$0                    | \$530,870              | \$1,893,905            | \$0                     | \$2.69              |
| ATMS (19)                                  | \$1,140,936            | \$0                    | \$598,142              | \$1,202,006            | \$1,958,849             | \$4.90              |
| Hazardous Waste Clean-up (Refineries) (22) | \$0                    | \$0                    | \$0                    | \$0                    | \$0                     | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0                    | \$0                    | \$1,293,997            | \$0                    | \$0                     | \$1.30              |
| <b>SUBTOTAL</b>                            | <b>\$36,452,911.93</b> | <b>\$9,531,478.75</b>  | <b>\$33,799,057.80</b> | <b>\$36,612,813.19</b> | <b>\$100,669,272.10</b> | <b>\$217.07</b>     |
| ROW (20)                                   | \$7,252,216            | \$5,769,824            | \$19,798,401           | \$21,867,558           | \$9,002,001             | \$63.69             |
| Wetlands Mitigation (21)                   | \$4,328,947            | \$2,026,316            | \$6,256,579            | \$9,087,719            | \$3,114,035             | \$24.82             |
|  |                        |                        |                        |                        |                         |                     |
| Signing 1%                                 | \$364,529              | \$95,315               | \$337,991              | \$366,128              | \$1,006,693             | \$2.18              |
| Utilities 8% (23)                          | \$2,916,233            | \$762,518              | \$2,703,925            | \$2,929,025            | \$8,053,542             | \$17.37             |
| Misc. Items 5%                             | \$1,822,646            | \$476,574              | \$1,689,953            | \$1,830,641            | \$5,033,464             | \$10.86             |
| Mobilization 7%                            | \$2,551,704            | \$667,204              | \$2,365,934            | \$2,562,897            | \$7,046,849             | \$15.20             |
| Contingencies 15%                          | \$5,467,937            | \$1,429,722            | \$5,069,859            | \$5,491,922            | \$15,100,391            | \$32.56             |
| Engineering 15%                            | \$5,467,937            | \$1,429,722            | \$5,069,859            | \$5,491,922            | \$15,100,391            | \$32.56             |
| <b>TOTAL</b>                               | <b>\$66,625,060.38</b> | <b>\$22,188,672.70</b> | <b>\$77,091,557.23</b> | <b>\$86,240,625.22</b> | <b>\$164,126,636.96</b> | <b>\$416.27</b>     |

Notes:

- (1) See attachment 1.
- (2) See attachment 2 and figure.
- (3) See attachment 3.
- (4) See attachment 4.
- (5) See attachment 5 and figure.
- (6) See attachment 6 and figure and attachment 9 figures.
- (7) See attachment 7 and figure.
- (8) See attachment 8 and figure.
- (9) See attachment 9 and figure.
- (10) See attachment 10.
- (11) See attachment 11 and figure.
- (12) See attachment 12 and figure.

- (13) See attachment 13 and figure.
- (14) See attachment 14 and attachment 2 figure.
- (15) See attachment 15.
- (16) See attachment 16.
- (17) See attachment 17.
- (18) See attachment 18 and figure.
- (19) See attachment 19.
- (20) See attachment 20 and figure.
- (21) See attachment 21.
- (22) See attachment 22 and figure.
- (23) See attachment 23.

APPENDIX C  
(CONTINUED)

LINK COST ESTIMATES  
(80 to 95 m [264 to 312ft] Right of Way Width)

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E Cost Estimate for Link 1 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$3,304,744  | \$3.31              |
| Asphalt Pavement (2)  | \$228,770    | \$0.23              |
| Trail Pavement (3)  | \$0          | \$0.00              |
| Trail Mulch (4)   | \$0          | \$0.00              |
| Earthwork (5)   | \$14,600,000 | \$14.60             |
| Barrier (6)   | \$980,982    | \$0.98              |
| Noise Walls (7)   | \$0          | \$0.00              |
| Retaining Walls (8)   | \$621,432    | \$0.62              |
| Structures (9)  | \$9,522,340  | \$9.52              |
| Striping (10)   | \$155,280    | \$0.16              |
| Fence (11)  | \$777,615    | \$0.78              |
| Drainage (12)   | \$964,696    | \$0.96              |
| Excavation (13)   | \$117,623    | \$0.12              |
| Demolition (14)   | \$315,963    | \$0.32              |
| Traffic Control (15)  | \$475,861    | \$0.48              |
| Landscaping (16)  | \$2,829,408  | \$2.83              |
| Lighting (17)   | \$157,823    | \$0.16              |
| Petroleum Pipelines Relocations (18)  | \$259,439    | \$0.26              |
| ATMS (19)   | \$1,140,936  | \$1.14              |
| Hazardous Waste Clean-up (Refineries) (22)  | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)   | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$36.46</b>      |
| ROW (20)  | \$7,252,216  | \$7.25              |
| Wetlands Mitigation (21)  | \$4,328,947  | \$4.33              |
|   |              |                     |
| Signing   | 1%           | \$0.36              |
| Utilities (23)  | 8%           | \$2.92              |
| Misc. Items   | 5%           | \$1.82              |
| Mobilization  | 7%           | \$2.55              |
| Contingencies   | 15%          | \$5.47              |
| Engineering   | 15%          | \$5.47              |
| <b>TOTAL</b>  |              | <b>\$66.63</b>      |

**Notes:**

(1) See attachment 1.

(2) See attachment 2 and figure.

(3) See attachment 3.

(4) See attachment 4.

(5) See attachment 5 and figure.

(6) See attachment 6 and figure and attachment 9 figures.

(7) See attachment 7 and figure.

(8) See attachment 8 and figure.

(9) See attachment 9 and figure.

(10) See attachment 10.

(11) See attachment 11 and figure.

(12) See attachment 12 and figure.

(13) See attachment 13 and figure.

(14) See attachment 14 and attachment 2 figure.

(15) See attachment 15.

(16) See attachment 16.

(17) See attachment 17.

(18) See attachment 18 and figure.

(19) See attachment 19.

(20) See attachment 20 and figure.

(21) See attachment 21.

(22) See attachment 22 and figure.

(23) See attachment 23.

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E without a Trail Cost<br>Estimate for Link 1 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$3,304,744  | \$3.31              |
| Asphalt Pavement (2)   | \$228,770    | \$0.23              |
| Earthwork (5)  | \$14,600,000 | \$14.60             |
| Barrier (6)  | \$980,982    | \$0.98              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$621,432    | \$0.62              |
| Structures (9)   | \$9,522,340  | \$9.52              |
| Striping (10)  | \$155,280    | \$0.16              |
| Fence (11)   | \$777,615    | \$0.78              |
| Drainage (12)  | \$964,696    | \$0.96              |
| Excavation (13)  | \$117,623    | \$0.12              |
| Demolition (14)  | \$315,963    | \$0.32              |
| Traffic Control (15)   | \$475,861    | \$0.48              |
| Landscaping (16)   | \$2,829,408  | \$2.83              |
| Lighting (17)  | \$157,823    | \$0.16              |
| Petroleum Pipelines Relocations (18)   | \$259,439    | \$0.26              |
| ATMS (19)  | \$1,958,849  | \$1.96              |
| Hazardous Waste Clean-up (Refineries) (22)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$37.28</b>      |
| ROW (20)   | \$7,252,216  | \$7.25              |
| Wetlands Mitigation (21)   | \$4,328,947  | \$4.33              |
|  |              |                     |
| Signing  | 1%           | \$0.37              |
| Utilities (23)   | 8%           | \$2.98              |
| Misc. Items  | 5%           | \$1.86              |
| Mobilization   | 7%           | \$2.61              |
| Contingencies  | 15%          | \$5.59              |
| Engineering  | 15%          | \$5.59              |
| <b>TOTAL</b>   |              | <b>\$67.87</b>      |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |



| Denver & Rio Grande Alternative DRG1 Cost Estimate for Link 2 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$4,959,910  | \$4.96              |
| Asphalt Pavement (2)  | \$872,400    | \$0.87              |
| Trail Pavement (3)  | \$145,320    | \$0.15              |
| Trail Mulch (4)   | \$3,460.00   | \$0.00              |
| Earthwork (5)   | \$6,900,000  | \$6.90              |
| Barrier (6)   | \$259,840    | \$0.26              |
| Noise Walls (7)   | \$1,285,550  | \$1.29              |
| Retaining Walls (8)   | \$2,931,250  | \$2.94              |
| Structures (9)  | \$9,763,020  | \$9.76              |
| Striping (10)   | \$22,263     | \$0.03              |
| Fence (11)  | \$374,912    | \$0.38              |
| Drainage (12)   | \$2,029,571  | \$2.03              |
| Excavation (13)   | \$155,840    | \$0.16              |
| Demolition (14)   | \$65,438     | \$0.07              |
| Traffic Control (15)  | \$51,808     | \$0.05              |
| Landscaping (16)  | \$825,224    | \$0.83              |
| Lighting (17)   | \$0          | \$0.00              |
| Petroleum Pipelines Relocations (18)                          | \$921,726    | \$0.92              |
| ATMS (19)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$1,418,113  | \$1.42              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$33.01</b>      |
| ROW (20)  | \$52,100,646 | \$52.10             |
| Wetlands Mitigation (21)                                      | \$1,570,175  | \$1.57              |
|   |              |                     |
| Signing   | 1%           | \$0.33              |
| Utilities (23)  | 8%           | \$2.64              |
| Misc. Items   | 5%           | \$1.65              |
| Mobilization  | 7%           | \$2.31              |
| Contingencies   | 15%          | \$4.95              |
| Engineering   | 15%          | \$4.95              |
| <b>TOTAL</b>  |              | <b>\$103.51</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG1 without a Trail Cost Estimate for Link 2 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$4,959,910  | \$4.96              |
| Asphalt Pavement (2)  | \$872,400    | \$0.87              |
| Earthwork (5)   | \$6,900,000  | \$6.90              |
| Barrier (6)   | \$259,840    | \$0.26              |
| Noise Walls (7)   | \$1,285,550  | \$1.29              |
| Retaining Walls (8)   | \$2,931,250  | \$2.93              |
| Structures (9)  | \$9,763,020  | \$9.76              |
| Striping (10)   | \$22,263     | \$0.02              |
| Fence (11)  | \$265,773    | \$0.27              |
| Drainage (12)   | \$2,029,571  | \$2.03              |
| Excavation (13)   | \$155,840    | \$0.16              |
| Demolition (14)   | \$65,438     | \$0.07              |
| Traffic Control (15)  | \$51,808     | \$0.05              |
| Landscaping (16)  | \$825,224    | \$0.83              |
| Lighting (17)   | \$0          | \$0.00              |
| Petroleum Pipelines Relocations (18)  | \$921,726    | \$0.92              |
| ATMS (19)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$1,418,113  | \$1.42              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$32.73</b>      |
| ROW (20)  | \$52,100,646 | \$52.10             |
| Wetlands Mitigation (21)  | \$1,570,175  | \$1.57              |
|   |              |                     |
| Signing   | 1%           | \$0.33              |
| Utilities (23)  | 8%           | \$2.62              |
| Misc. Items   | 5%           | \$1.64              |
| Mobilization  | 7%           | \$2.29              |
| Contingencies   | 15%          | \$4.91              |
| Engineering   | 15%          | \$4.91              |
| <b>TOTAL</b>  |              | <b>\$103.09</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG2 Cost Estimate for Link 2 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$4,959,910  | \$4.96              |
| Asphalt Pavement (2)  | \$577,800    | \$0.58              |
| Trail Pavement (3)  | \$145,320    | \$0.15              |
| Trail Mulch (4)   | \$3,460.00   | \$0.00              |
| Earthwork (5)   | \$5,800,000  | \$5.80              |
| Barrier (6)   | \$259,840    | \$0.26              |
| Noise Walls (7)   | \$1,887,900  | \$1.89              |
| Retaining Walls (8)   | \$2,931,250  | \$2.94              |
| Structures (9)  | \$9,763,020  | \$9.76              |
| Striping (10)   | \$22,263     | \$0.03              |
| Fence (11)  | \$341,277    | \$0.35              |
| Drainage (12)   | \$1,860,027  | \$1.86              |
| Excavation (13)   | \$105,204    | \$0.11              |
| Demolition (14)   | \$48,972     | \$0.05              |
| Traffic Control (15)  | \$51,808     | \$0.05              |
| Landscaping (16)  | \$825,224    | \$0.83              |
| Lighting (17)   | \$0          | \$0.00              |
| Petroleum Pipelines Relocations (18)                          | \$291,382    | \$0.29              |
| ATMS (19)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$168,166    | \$0.17              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$30.07</b>      |
| ROW (20)  | \$51,359,707 | \$51.36             |
| Wetlands Mitigation (21)                                      | \$3,942,982  | \$3.94              |
|   |              |                     |
| Signing   | 1%           | \$0.30              |
| Utilities (23)  | 8%           | \$2.41              |
| Misc. Items   | 5%           | \$1.50              |
| Mobilization  | 7%           | \$2.10              |
| Contingencies   | 15%          | \$4.51              |
| Engineering   | 15%          | \$4.51              |
| <b>TOTAL</b>  |              | <b>\$100.71</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG2 without a Trail Cost Estimate for Link 2 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$4,959,910  | \$4.96              |
| Asphalt Pavement (2)  | \$577,800    | \$0.58              |
| Earthwork (5)   | \$5,800,000  | \$5.80              |
| Barrier (6)   | \$259,840    | \$0.26              |
| Noise Walls (7)   | \$1,887,900  | \$1.89              |
| Retaining Walls (8)   | \$2,931,250  | \$2.93              |
| Structures (9)  | \$9,763,020  | \$9.76              |
| Striping (10)   | \$22,263     | \$0.02              |
| Fence (11)  | \$249,264    | \$0.25              |
| Drainage (12)   | \$1,860,027  | \$1.86              |
| Excavation (13)   | \$105,204    | \$0.11              |
| Demolition (14)   | \$48,972     | \$0.05              |
| Traffic Control (15)  | \$51,808     | \$0.05              |
| Landscaping (16)  | \$825,224    | \$0.83              |
| Lighting (17)   | \$0          | \$0.00              |
| Petroleum Pipelines Relocations (18)  | \$291,382    | \$0.29              |
| ATMS (19)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$168,166    | \$0.17              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$29.80</b>      |
| ROW (20)  | \$51,359,707 | \$51.36             |
| Wetlands Mitigation (21)  | \$3,942,982  | \$3.94              |
|   |              |                     |
| Signing   | 1%           | \$0.30              |
| Utilities (23)  | 8%           | \$2.38              |
| Misc. Items   | 5%           | \$1.49              |
| Mobilization  | 7%           | \$2.09              |
| Contingencies   | 15%          | \$4.47              |
| Engineering   | 15%          | \$4.47              |
| <b>TOTAL</b>  |              | <b>\$100.30</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG3, 4, 5 and Alternative E Cost Estimate for Link 2 |             |                     |
|---|-------------|---------------------|
| ITEM  | COST        |                     |
|   | UNIT        | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$3,807,376 | \$3.81              |
| Asphalt Pavement (2)  | \$21,000    | \$0.02              |
| Trail Pavement (3)  | \$111,552   | \$0.11              |
| Trail Mulch (4)   | \$2,656.00  | \$0.00              |
| Earthwork (5)   | \$3,400,000 | \$3.40              |
| Barrier (6)   | \$0         | \$0.00              |
| Noise Walls (7)   | \$0         | \$0.00              |
| Retaining Walls (8)   | \$0         | \$0.00              |
| Structures (9)  | \$0         | \$0.00              |
| Striping (10)   | \$14,940    | \$0.02              |
| Fence (11)  | \$261,353   | \$0.27              |
| Drainage (12)   | \$1,241,632 | \$1.24              |
| Excavation (13)   | \$3,675     | \$0.00              |
| Demolition (14)   | \$13,914    | \$0.01              |
| Traffic Control (15)  | \$30,100    | \$0.03              |
| Landscaping (16)  | \$623,281   | \$0.62              |
| Lighting (17)   | \$0         | \$0.00              |
| Petroleum Pipelines Relocations (18)  | \$0         | \$0.00              |
| ATMS (19)   | \$0         | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)  | \$0         | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)   | \$0         | \$0.00              |
| <b>SUBTOTAL</b>   |             | <b>\$9.55</b>       |
| ROW (20)  | \$5,769,824 | \$5.77              |
| Wetlands Mitigation (21)  | \$2,026,316 | \$2.03              |
|   |             |                     |
| Signing   | 1%          | \$0.10              |
| Utilities (23)  | 8%          | \$0.76              |
| Misc. Items   | 5%          | \$0.48              |
| Mobilization  | 7%          | \$0.67              |
| Contingencies   | 15%         | \$1.43              |
| Engineering   | 15%         | \$1.43              |
| <b>TOTAL</b>  |             | <b>\$22.21</b>      |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG3, 4, 5 and Alternative E without a Trail Cost Estimate<br>for Link 2 |             |                     |
|--|-------------|---------------------|
| ITEM   | COST        |                     |
|  | UNIT        | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$3,807,376 | \$3.81              |
| Asphalt Pavement (2)   | \$21,000    | \$0.02              |
| Earthwork (5)  | \$3,400,000 | \$3.40              |
| Barrier (6)  | \$0         | \$0.00              |
| Noise Walls (7)  | \$0         | \$0.00              |
| Retaining Walls (8)  | \$0         | \$0.00              |
| Structures (9)   | \$0         | \$0.00              |
| Striping (10)  | \$14,940    | \$0.02              |
| Fence (11)   | \$192,763   | \$0.19              |
| Drainage (12)  | \$1,241,632 | \$1.24              |
| Excavation (13)  | \$3,675     | \$0.00              |
| Demolition (14)  | \$13,914    | \$0.01              |
| Traffic Control (15)   | \$30,100    | \$0.03              |
| Landscaping (16)   | \$623,281   | \$0.62              |
| Lighting (17)  | \$0         | \$0.00              |
| Petroleum Pipelines Relocations (18)   | \$0         | \$0.00              |
| ATMS (19)  | \$0         | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)   | \$0         | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0         | \$0.00              |
| <b>SUBTOTAL</b>  |             | <b>\$9.35</b>       |
| ROW (20)   | \$5,769,824 | \$5.77              |
| Wetlands Mitigation (21)   | \$2,026,316 | \$2.03              |
|  |             |                     |
| Signing  | 1%          | \$0.09              |
| Utilities (23)   | 8%          | \$0.75              |
| Misc. Items  | 5%          | \$0.47              |
| Mobilization   | 7%          | \$0.65              |
| Contingencies  | 15%         | \$1.40              |
| Engineering  | 15%         | \$1.40              |
| <b>TOTAL</b>   |             | <b>\$21.92</b>      |

**Notes:**

- |   |  |
|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG1, 2 Cost Estimate for Link 3 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$9,851,084  | \$9.86              |
| Asphalt Pavement (2)   | \$1,332,300  | \$1.33              |
| Trail Pavement (3)   | \$189,000    | \$0.19              |
| Trail Mulch (4)  | \$4,500.00   | \$0.00              |
| Earthwork (5)  | \$10,700,000 | \$10.70             |
| Barrier (6)  | \$389,760    | \$0.39              |
| Noise Walls (7)  | \$2,334,500  | \$2.33              |
| Retaining Walls (8)  | \$5,111,750  | \$5.12              |
| Structures (9)   | \$23,797,361 | \$23.80             |
| Striping (10)  | \$37,313     | \$0.04              |
| Fence (11)   | \$535,529    | \$0.54              |
| Drainage (12)  | \$3,738,091  | \$3.74              |
| Excavation (13)  | \$219,977    | \$0.22              |
| Demolition (14)  | \$186,115    | \$0.19              |
| Traffic Control (15)   | \$67,380     | \$0.07              |
| Landscaping (16)   | \$1,073,268  | \$1.07              |
| Lighting (17)  | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                             | \$3,360,227  | \$3.36              |
| ATMS (19)  | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                       | \$1,692,407  | \$1.69              |
| Hazardous Waste Clean-up (Landfills) (22)                        | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$65.37</b>      |
| ROW (20)   | \$86,518,518 | \$86.52             |
| Wetlands Mitigation (21)   | \$5,015,351  | \$5.02              |
|  |              |                     |
| Signing  | 1%           | \$0.65              |
| Utilities (23)   | 8%           | \$5.23              |
| Misc. Items  | 5%           | \$3.27              |
| Mobilization   | 7%           | \$4.58              |
| Contingencies  | 15%          | \$9.81              |
| Engineering  | 15%          | \$9.81              |
| <b>TOTAL</b>   |              | <b>\$190.25</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG1, 2 without a Trail Cost Estimate for Link 3 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$9,851,084  | \$9.86              |
| Asphalt Pavement (2)   | \$1,332,300  | \$1.33              |
| Earthwork (5)  | \$10,700,000 | \$10.70             |
| Barrier (6)  | \$389,760    | \$0.39              |
| Noise Walls (7)  | \$2,334,500  | \$2.33              |
| Retaining Walls (8)  | \$5,111,750  | \$5.11              |
| Structures (9)   | \$23,797,361 | \$23.80             |
| Striping (10)  | \$37,313     | \$0.04              |
| Fence (11)   | \$381,466    | \$0.38              |
| Drainage (12)  | \$3,738,091  | \$3.74              |
| Excavation (13)  | \$219,977    | \$0.22              |
| Demolition (14)  | \$186,115    | \$0.19              |
| Traffic Control (15)   | \$67,380     | \$0.07              |
| Landscaping (16)   | \$1,073,268  | \$1.07              |
| Lighting (17)  | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)   | \$3,360,227  | \$3.36              |
| ATMS (19)  | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                       | \$1,692,407  | \$1.69              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$65.01</b>      |
| ROW (20)   | \$86,518,518 | \$86.52             |
| Wetlands Mitigation (21)   | \$5,015,351  | \$5.02              |
|  |              |                     |
| Signing  | 1%           | \$0.65              |
| Utilities (23)   | 8%           | \$5.20              |
| Misc. Items  | 5%           | \$3.25              |
| Mobilization   | 7%           | \$4.55              |
| Contingencies  | 15%          | \$9.75              |
| Engineering  | 15%          | \$9.75              |
| <b>TOTAL</b>   |              | <b>\$189.70</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |



| Denver & Rio Grande Alternative DRG3 Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,565,550 | \$11.57             |
| Asphalt Pavement (2)  | \$1,069,680  | \$1.07              |
| Trail Pavement (3)  | \$239,232    | \$0.24              |
| Trail Mulch (4)   | \$5,696.00   | \$0.01              |
| Earthwork (5)   | \$13,100,000 | \$13.10             |
| Barrier (6)   | \$519,680    | \$0.52              |
| Noise Walls (7)   | \$2,103,500  | \$2.10              |
| Retaining Walls (8)   | \$6,552,000  | \$6.56              |
| Structures (9)  | \$29,492,456 | \$29.49             |
| Striping (10)   | \$45,440     | \$0.05              |
| Fence (11)  | \$643,072    | \$0.65              |
| Drainage (12)   | \$4,074,832  | \$4.07              |
| Excavation (13)   | \$167,825    | \$0.17              |
| Demolition (14)   | \$162,873    | \$0.16              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                          | \$2,720,517  | \$2.72              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$1,449,542  | \$1.45              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$76.04</b>      |
| ROW (20)  | \$72,108,401 | \$72.11             |
| Wetlands Mitigation (21)                                      | \$5,690,789  | \$5.69              |
|   |              |                     |
| Signing   | 1%           | \$0.76              |
| Utilities (23)  | 8%           | \$6.08              |
| Misc. Items   | 5%           | \$3.80              |
| Mobilization  | 7%           | \$5.32              |
| Contingencies   | 15%          | \$11.41             |
| Engineering   | 15%          | \$11.41             |
| <b>TOTAL</b>  |              | <b>\$192.62</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG3 without a Trail Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,565,550 | \$11.57             |
| Asphalt Pavement (2)  | \$1,069,680  | \$1.07              |
| Earthwork (5)   | \$13,100,000 | \$13.10             |
| Barrier (6)   | \$519,680    | \$0.52              |
| Noise Walls (7)   | \$2,103,500  | \$2.10              |
| Retaining Walls (8)   | \$6,552,000  | \$6.55              |
| Structures (9)  | \$29,492,456 | \$29.49             |
| Striping (10)   | \$45,440     | \$0.05              |
| Fence (11)  | \$469,626    | \$0.47              |
| Drainage (12)   | \$4,074,832  | \$4.07              |
| Excavation (13)   | \$167,825    | \$0.17              |
| Demolition (14)   | \$162,873    | \$0.16              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)  | \$2,720,517  | \$2.72              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$1,449,542  | \$1.45              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$75.60</b>      |
| ROW (20)  | \$72,108,401 | \$72.11             |
| Wetlands Mitigation (21)  | \$5,690,789  | \$5.69              |
|   |              |                     |
| Signing   | 1%           | \$0.76              |
| Utilities (23)  | 8%           | \$6.05              |
| Misc. Items   | 5%           | \$3.78              |
| Mobilization  | 7%           | \$5.29              |
| Contingencies   | 15%          | \$11.34             |
| Engineering   | 15%          | \$11.34             |
| <b>TOTAL</b>  |              | <b>\$191.96</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG4 Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,324,722 | \$11.33             |
| Asphalt Pavement (2)  | \$1,217,475  | \$1.22              |
| Trail Pavement (3)  | \$232,176    | \$0.23              |
| Trail Mulch (4)   | \$5,528.00   | \$0.01              |
| Earthwork (5)   | \$12,600,000 | \$12.60             |
| Barrier (6)   | \$584,640    | \$0.58              |
| Noise Walls (7)   | \$1,962,800  | \$1.96              |
| Retaining Walls (8)   | \$5,733,000  | \$5.74              |
| Structures (9)  | \$20,949,813 | \$20.95             |
| Striping (10)   | \$44,495     | \$0.05              |
| Fence (11)  | \$610,243    | \$0.62              |
| Drainage (12)   | \$3,800,255  | \$3.80              |
| Excavation (13)   | \$164,150    | \$0.16              |
| Demolition (14)   | \$152,783    | \$0.15              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                          | \$3,072,960  | \$3.07              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$64.59</b>      |
| ROW (20)  | \$74,108,401 | \$74.11             |
| Wetlands Mitigation (21)                                      | \$5,473,684  | \$5.47              |
|   |              |                     |
| Signing   | 1%           | \$0.65              |
| Utilities (23)  | 8%           | \$5.17              |
| Misc. Items   | 5%           | \$3.23              |
| Mobilization  | 7%           | \$4.52              |
| Contingencies   | 15%          | \$9.69              |
| Engineering   | 15%          | \$9.69              |
| <b>TOTAL</b>  |              | <b>\$177.11</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG4 without a Trail Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,324,722 | \$11.33             |
| Asphalt Pavement (2)  | \$1,217,475  | \$1.22              |
| Earthwork (5)   | \$12,600,000 | \$12.60             |
| Barrier (6)   | \$584,640    | \$0.58              |
| Noise Walls (7)   | \$1,962,800  | \$1.96              |
| Retaining Walls (8)   | \$5,733,000  | \$5.73              |
| Structures (9)  | \$20,949,813 | \$20.95             |
| Striping (10)   | \$44,495     | \$0.04              |
| Fence (11)  | \$445,324    | \$0.45              |
| Drainage (12)   | \$3,800,255  | \$3.80              |
| Excavation (13)   | \$164,150    | \$0.16              |
| Demolition (14)   | \$152,783    | \$0.15              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)  | \$3,072,960  | \$3.07              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$64.16</b>      |
| ROW (20)  | \$74,108,401 | \$74.11             |
| Wetlands Mitigation (21)  | \$5,473,684  | \$5.47              |
|   |              |                     |
| Signing   | 1%           | \$0.64              |
| Utilities (23)  | 8%           | \$5.13              |
| Misc. Items   | 5%           | \$3.21              |
| Mobilization  | 7%           | \$4.49              |
| Contingencies   | 15%          | \$9.62              |
| Engineering   | 15%          | \$9.62              |
| <b>TOTAL</b>  |              | <b>\$176.47</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG5 Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,089,628 | \$11.09             |
| Asphalt Pavement (2)  | \$1,323,900  | \$1.32              |
| Trail Pavement (3)  | \$225,288    | \$0.23              |
| Trail Mulch (4)   | \$5,364.00   | \$0.01              |
| Earthwork (5)   | \$11,600,000 | \$11.60             |
| Barrier (6)   | \$519,680    | \$0.52              |
| Noise Walls (7)   | \$2,156,000  | \$2.16              |
| Retaining Walls (8)   | \$4,635,750  | \$4.64              |
| Structures (9)  | \$19,526,040 | \$19.53             |
| Striping (10)   | \$43,573     | \$0.05              |
| Fence (11)  | \$613,737    | \$0.62              |
| Drainage (12)   | \$3,928,849  | \$3.93              |
| Excavation (13)   | \$182,350    | \$0.18              |
| Demolition (14)   | \$164,561    | \$0.16              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                          | \$2,642,517  | \$2.64              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$60.78</b>      |
| ROW (20)  | \$79,108,401 | \$79.11             |
| Wetlands Mitigation (21)                                      | \$4,690,789  | \$4.69              |
|   |              |                     |
| Signing   | 1%           | \$0.61              |
| Utilities (23)  | 8%           | \$4.86              |
| Misc. Items   | 5%           | \$3.04              |
| Mobilization  | 7%           | \$4.25              |
| Contingencies   | 15%          | \$9.12              |
| Engineering   | 15%          | \$9.12              |
| <b>TOTAL</b>  |              | <b>\$175.57</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG5 without a Trail Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,089,628 | \$11.09             |
| Asphalt Pavement (2)  | \$1,323,900  | \$1.32              |
| Earthwork (5)   | \$11,600,000 | \$11.60             |
| Barrier (6)   | \$519,680    | \$0.52              |
| Noise Walls (7)   | \$2,156,000  | \$2.16              |
| Retaining Walls (8)   | \$4,635,750  | \$4.64              |
| Structures (9)  | \$19,526,040 | \$19.53             |
| Striping (10)   | \$43,573     | \$0.04              |
| Fence (11)  | \$442,159    | \$0.44              |
| Drainage (12)   | \$3,928,849  | \$3.93              |
| Excavation (13)   | \$182,350    | \$0.18              |
| Demolition (14)   | \$164,561    | \$0.16              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)  | \$2,642,517  | \$2.64              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$60.36</b>      |
| ROW (20)  | \$79,108,401 | \$79.11             |
| Wetlands Mitigation (21)  | \$4,690,789  | \$4.69              |
|   |              |                     |
| Signing   | 1%           | \$0.60              |
| Utilities (23)  | 8%           | \$4.83              |
| Misc. Items   | 5%           | \$3.02              |
| Mobilization  | 7%           | \$4.23              |
| Contingencies   | 15%          | \$9.05              |
| Engineering   | 15%          | \$9.05              |
| <b>TOTAL</b>  |              | <b>\$174.94</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative E Cost Estimate for Link 3 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)                                      | \$11,267,382 | \$11.27             |
| Asphalt Pavement (2)                                       | \$2,064,075  | \$2.06              |
| Trail Pavement (3)   | \$230,496    | \$0.23              |
| Trail Mulch (4)  | \$5,488.00   | \$0.01              |
| Earthwork (5)  | \$7,900,000  | \$7.90              |
| Barrier (6)  | \$129,920    | \$0.13              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$0          | \$0.00              |
| Structures (9)   | \$5,039,296  | \$5.04              |
| Striping (10)  | \$40,070     | \$0.05              |
| Fence (11)   | \$587,215    | \$0.59              |
| Drainage (12)  | \$2,541,122  | \$2.54              |
| Excavation (13)  | \$40,900     | \$0.04              |
| Demolition (14)  | \$43,064     | \$0.04              |
| Traffic Control (15)                                       | \$62,548     | \$0.06              |
| Landscaping (16)   | \$1,295,184  | \$1.30              |
| Lighting (17)  | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                       | \$530,870    | \$0.53              |
| ATMS (19)  | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                 | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                  | \$1,293,997  | \$1.29              |
| <b>SUBTOTAL</b>  |              | <b>\$33.81</b>      |
| ROW (20)   | \$19,798,401 | \$19.80             |
| Wetlands Mitigation (21)                                   | \$6,256,579  | \$6.26              |
|  |              |                     |
| Signing  | 1%           | \$0.34              |
| Utilities (23)   | 8%           | \$2.71              |
| Misc. Items  | 5%           | \$1.69              |
| Mobilization   | 7%           | \$2.37              |
| Contingencies  | 15%          | \$5.07              |
| Engineering  | 15%          | \$5.07              |
| <b>TOTAL</b>   |              | <b>\$77.11</b>      |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative E without a Trail Cost Estimate for Link 3 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$11,267,382 | \$11.27             |
| Asphalt Pavement (2)   | \$2,064,075  | \$2.06              |
| Earthwork (5)  | \$7,900,000  | \$7.90              |
| Barrier (6)  | \$129,920    | \$0.13              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$0          | \$0.00              |
| Structures (9)   | \$5,039,296  | \$5.04              |
| Striping (10)  | \$40,070     | \$0.04              |
| Fence (11)   | \$419,411    | \$0.42              |
| Drainage (12)  | \$2,541,122  | \$2.54              |
| Excavation (13)  | \$40,900     | \$0.04              |
| Demolition (14)  | \$43,064     | \$0.04              |
| Traffic Control (15)   | \$62,548     | \$0.06              |
| Landscaping (16)   | \$1,295,184  | \$1.30              |
| Lighting (17)  | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                                       | \$530,870    | \$0.53              |
| ATMS (19)  | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                 | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                                  | \$1,293,997  | \$1.29              |
| <b>SUBTOTAL</b>  |              | <b>\$33.40</b>      |
| ROW (20)   | \$19,798,401 | \$19.80             |
| Wetlands Mitigation (21)   | \$6,256,579  | \$6.26              |
|  |              |                     |
| Signing  | 1%           | \$0.33              |
| Utilities (23)   | 8%           | \$2.67              |
| Misc. Items  | 5%           | \$1.67              |
| Mobilization   | 7%           | \$2.34              |
| Contingencies  | 15%          | \$5.01              |
| Engineering  | 15%          | \$5.01              |
| <b>TOTAL</b>   |              | <b>\$76.49</b>      |

**Notes:**

- |   |  |
|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |



| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E Cost Estimate for Link 4 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$10,866,002 | \$10.87             |
| Asphalt Pavement (2)  | \$540,750    | \$0.54              |
| Trail Pavement (3)  | \$218,736    | \$0.22              |
| Trail Mulch (4)   | \$5,208.00   | \$0.01              |
| Earthwork (5)   | \$8,300,000  | \$8.30              |
| Barrier (6)   | \$194,880    | \$0.19              |
| Noise Walls (7)   | \$0          | \$0.00              |
| Retaining Walls (8)   | \$875,000    | \$0.88              |
| Structures (9)  | \$6,712,076  | \$6.71              |
| Striping (10)   | \$39,895     | \$0.04              |
| Fence (11)  | \$568,525    | \$0.57              |
| Drainage (12)   | \$3,656,376  | \$3.66              |
| Excavation (13)   | \$90,984     | \$0.09              |
| Demolition (14)   | \$28,611     | \$0.03              |
| Traffic Control (15)  | \$59,499     | \$0.06              |
| Landscaping (16)  | \$1,232,065  | \$1.23              |
| Lighting (17)   | \$128,294    | \$0.13              |
| Petroleum Pipelines Relocations (18)  | \$1,893,905  | \$1.89              |
| ATMS (19)   | \$1,202,006  | \$1.20              |
| Hazardous Waste Clean-up (Refineries) (22)  | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)   | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$36.62</b>      |
| ROW (20)  | \$21,867,558 | \$21.87             |
| Wetlands Mitigation (21)  | \$9,087,719  | \$9.09              |
|   |              |                     |
| Signing   | 1%           | \$0.37              |
| Utilities (23)  | 8%           | \$2.93              |
| Misc. Items   | 5%           | \$1.83              |
| Mobilization  | 7%           | \$2.56              |
| Contingencies   | 15%          | \$5.49              |
| Engineering   | 15%          | \$5.49              |
| <b>TOTAL</b>  |              | <b>\$86.25</b>      |

**Notes:**

(1) See attachment 1.

(2) See attachment 2 and figure.

(3) See attachment 3.

(4) See attachment 4.

(5) See attachment 5 and figure.

(6) See attachment 6 and figure and attachment 9 figures.

(7) See attachment 7 and figure.

(8) See attachment 8 and figure.

(9) See attachment 9 and figure.

(10) See attachment 10.

(11) See attachment 11 and figure.

(12) See attachment 12 and figure.

(13) See attachment 13 and figure.

(14) See attachment 14 and attachment 2 figure.

(15) See attachment 15.

(16) See attachment 16.

(17) See attachment 17.

(18) See attachment 18 and figure.

(19) See attachment 19.

(20) See attachment 20 and figure.

(21) See attachment 21.

(22) See attachment 22 and figure.

(23) See attachment 23.

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E without a Trail Cost<br>Estimate for Link 4 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$10,866,002 | \$10.87             |
| Asphalt Pavement (2)   | \$540,750    | \$0.54              |
| Earthwork (5)  | \$8,300,000  | \$8.30              |
| Barrier (6)  | \$194,880    | \$0.19              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$875,000    | \$0.88              |
| Structures (9)   | \$6,712,076  | \$6.71              |
| Striping (10)  | \$39,895     | \$0.04              |
| Fence (11)   | \$436,740    | \$0.44              |
| Drainage (12)  | \$3,656,376  | \$3.66              |
| Excavation (13)  | \$90,984     | \$0.09              |
| Demolition (14)  | \$28,611     | \$0.03              |
| Traffic Control (15)   | \$59,499     | \$0.06              |
| Landscaping (16)   | \$1,232,065  | \$1.23              |
| Lighting (17)  | \$128,294    | \$0.13              |
| Petroleum Pipelines Relocations (18)   | \$1,893,905  | \$1.89              |
| ATMS (19)  | \$1,202,006  | \$1.20              |
| Hazardous Waste Clean-up (Refineries) (22)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$36.26</b>      |
| ROW (20)   | \$21,867,558 | \$21.87             |
| Wetlands Mitigation (21)   | \$9,087,719  | \$9.09              |
|  |              |                     |
| Signing  | 1%           | \$0.36              |
| Utilities (23)   | 8%           | \$2.90              |
| Misc. Items  | 5%           | \$1.81              |
| Mobilization   | 7%           | \$2.54              |
| Contingencies  | 15%          | \$5.44              |
| Engineering  | 15%          | \$5.44              |
| <b>TOTAL</b>   |              | <b>\$85.71</b>      |

**Notes:**

- |   |  |
|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E Cost Estimate for Link 5 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$8,050,775  | \$8.06              |
| Asphalt Pavement (2)  | \$2,582,296  | \$2.58              |
| Trail Pavement (3)  | \$0          | \$0.00              |
| Trail Mulch (4)   | \$0          | \$0.00              |
| Earthwork (5)   | \$18,800,000 | \$18.80             |
| Barrier (6)   | \$1,327,066  | \$1.33              |
| Noise Walls (7)   | \$0          | \$0.00              |
| Retaining Walls (8)   | \$12,440,356 | \$12.44             |
| Structures (9)  | \$45,585,413 | \$45.59             |
| Striping (10)   | \$412,752    | \$0.41              |
| Fence (11)  | \$606,851    | \$0.61              |
| Drainage (12)   | \$2,798,256  | \$2.80              |
| Excavation (13)   | \$321,962    | \$0.32              |
| Demolition (14)   | \$1,065,007  | \$1.07              |
| Traffic Control (15)  | \$1,426,322  | \$1.43              |
| Landscaping (16)  | \$2,078,752  | \$2.08              |
| Lighting (17)   | \$1,214,615  | \$1.21              |
| Petroleum Pipelines Relocations (18)  | \$0          | \$0.00              |
| ATMS (19)   | \$1,958,849  | \$1.96              |
| Hazardous Waste Clean-up (Refineries) (22)  | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)   | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$100.68</b>     |
| ROW (20)  | \$9,002,001  | \$9.00              |
| Wetlands Mitigation (21)  | \$3,114,035  | \$3.11              |
|   |              |                     |
| Signing   | 1%           | \$1.01              |
| Utilities (23)  | 8%           | \$8.05              |
| Misc. Items   | 5%           | \$5.03              |
| Mobilization  | 7%           | \$7.05              |
| Contingencies   | 15%          | \$15.10             |
| Engineering   | 15%          | \$15.10             |
| <b>TOTAL</b>  |              | <b>\$164.14</b>     |

**Notes:**

(1) See attachment 1.

(2) See attachment 2 and figure.

(3) See attachment 3.

(4) See attachment 4.

(5) See attachment 5 and figure.

(6) See attachment 6 and figure and attachment 9 figures.

(7) See attachment 7 and figure.

(8) See attachment 8 and figure.

(9) See attachment 9 and figure.

(10) See attachment 10.

(11) See attachment 11 and figure.

(12) See attachment 12 and figure.

(13) See attachment 13 and figure.

(14) See attachment 14 and attachment 2 figure.

(15) See attachment 15.

(16) See attachment 16.

(17) See attachment 17.

(18) See attachment 18 and figure.

(19) See attachment 19.

(20) See attachment 20 and figure.

(21) See attachment 21.

(22) See attachment 22 and figure.

(23) See attachment 23.

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E without a Trail Cost<br>Estimate for Link 5 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$8,050,775  | \$8.06              |
| Asphalt Pavement (2)   | \$2,582,296  | \$2.58              |
| Earthwork (5)  | \$18,800,000 | \$18.80             |
| Barrier (6)  | \$1,327,066  | \$1.33              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$12,440,356 | \$12.44             |
| Structures (9)   | \$45,585,413 | \$45.59             |
| Striping (10)  | \$412,752    | \$0.41              |
| Fence (11)   | \$606,851    | \$0.61              |
| Drainage (12)  | \$2,798,256  | \$2.80              |
| Excavation (13)  | \$321,962    | \$0.32              |
| Demolition (14)  | \$1,065,007  | \$1.07              |
| Traffic Control (15)   | \$1,426,322  | \$1.43              |
| Landscaping (16)   | \$2,078,752  | \$2.08              |
| Lighting (17)  | \$1,214,615  | \$1.21              |
| Petroleum Pipelines Relocations (18)   | \$0          | \$0.00              |
| ATMS (19)  | \$1,140,936  | \$1.14              |
| Hazardous Waste Clean-up (Refineries) (22)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$99.86</b>      |
| ROW (20)   | \$9,002,001  | \$9.00              |
| Wetlands Mitigation (21)   | \$3,114,035  | \$3.11              |
|  |              |                     |
| Signing  | 1%           | \$1.00              |
| Utilities (23)   | 8%           | \$7.99              |
| Misc. Items  | 5%           | \$4.99              |
| Mobilization   | 7%           | \$6.99              |
| Contingencies  | 15%          | \$14.98             |
| Engineering  | 15%          | \$14.98             |
| <b>TOTAL</b>   |              | <b>\$162.91</b>     |

**Notes:**

- |   |  |
|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

APPENDIX C  
(CONTINUED)

COST ESTIMATE ATTACHMENTS  
(80 to 95 m [264 to 312ft] Right of Way Width)

|                |                             |                 |     |             |          |
|----------------|-----------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS                 | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates          | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Concrete Pavement Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                             | <b>No.</b>      |     |             |          |

Concrete pavement is used for the mainline pavement and interchanges (ramps).

Roadway concrete costs are based on UDOT average bid prices 2003.

Roadway concrete pavement 12" thick @ ~\$41/m<sup>2</sup> for concrete. Add basecourse at \$10/m<sup>3</sup> assuming 2' (0.61 m) thick or \$6/m<sup>2</sup>. Total price \$47/m<sup>2</sup>.

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

|                  | Concrete            | Base Course        | Total              |
|------------------|---------------------|--------------------|--------------------|
| North            |                     |                    |                    |
| Interchange      | \$6,191,192         | \$1,859,583        | <b>\$8,050,775</b> |
| South            |                     |                    |                    |
| Interchange      | \$2,640,322         | \$664,422          | <b>\$3,304,744</b> |
| 500 South        |                     |                    |                    |
| Interchange      | \$2,763,657         | \$636,677          | <b>\$3,400,334</b> |
| Parrish          |                     |                    |                    |
| Lane             |                     |                    |                    |
| Interchange      | \$2,763,657         | \$636,677          | <b>\$3,400,334</b> |
| <b>Subtotal=</b> | <b>\$14,358,828</b> | <b>\$3,797,359</b> |                    |
| <b>Total=</b>    | <b>\$18,156,187</b> |                    |                    |

Assume same cost as Parrish Interchange

#### Mainline Pavement

|              | width<br>(ft) | Quantity | Total (ft)    |
|--------------|---------------|----------|---------------|
| Outside      |               |          |               |
| Shoulder     | 12            | 2        | 24            |
| Travel Lanes | 12            | 4        | 48            |
| Inside       |               |          |               |
| Shoulder     | 4             | 2        | 8             |
|              |               |          | <b>80</b>     |
|              |               |          | <b>24.4 m</b> |

#### Unit Cost

\$/m<sup>2</sup>      \$47

| Alt   |        | Length,<br>Excluding N/S<br>Interchanges<br>(miles) | Length,<br>Excluding<br>N/S<br>Interchanges<br>(m) | Pavement<br>Area (m2) | Cost        | Cost of<br>Interchange<br>in Link | Total Cost          |
|-------|--------|---|--|-----------------------|-------------|-----------------------------------|---------------------|
| DRG 1 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 2.5   | 4,325  | 105,530               | \$4,959,910 | \$0                               | <b>\$4,959,910</b>  |
|       | Link 3 | 3.6   | 5,625  | 137,250               | \$6,450,750 | \$3,400,334                       | <b>\$9,851,084</b>  |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| DRG 2 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 2.5   | 4,325  | 105,530               | \$4,959,910 | \$0                               | <b>\$4,959,910</b>  |
|       | Link 3 | 3.6   | 5,625  | 137,250               | \$6,450,750 | \$3,400,334                       | <b>\$9,851,084</b>  |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| DRG 3 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 1.9   | 3,320  | 81,008                | \$3,807,376 | \$0                               | <b>\$3,807,376</b>  |
|       | Link 3 | 4.5   | 7,120  | 173,728               | \$8,165,216 | \$3,400,334                       | <b>\$11,565,550</b> |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| DRG 4 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 1.9   | 3,320  | 81,008                | \$3,807,376 | \$0                               | <b>\$3,807,376</b>  |
|       | Link 3 | 4.4   | 6,910  | 168,604               | \$7,924,388 | \$3,400,334                       | <b>\$11,324,722</b> |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| DRG 5 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 1.9   | 3,320  | 81,008                | \$3,807,376 | \$0                               | <b>\$3,807,376</b>  |
|       | Link 3 | 4.3   | 6,705  | 163,602               | \$7,689,294 | \$3,400,334                       | <b>\$11,089,628</b> |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| ALT E | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 1.9   | 3,320  | 81,008                | \$3,807,376 | \$0                               | <b>\$3,807,376</b>  |
|       | Link 3 | 4.4   | 6,860  | 167,384               | \$7,867,048 | \$3,400,334                       | <b>\$11,267,382</b> |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |

|                |                            |                 |     |             |          |
|----------------|----------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS                | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates         | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Asphalt Pavement Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                            | <b>No.</b>      |     |             |          |

Asphalt pavement is used for frontage roads, crossing streets and cul-de-sacs.

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

Asphalt unit cost pavement based on UDOT average bid prices 2003.

Roadway asphalt pavement 8" thick @ ~\$25/m<sup>2</sup> for asphalt. Add basecourse at \$10/m<sup>3</sup> assuming 20" (0.51 m) thick or \$5/m<sup>2</sup>.

Crossing streets, Center Street and State Street are included in the termini interchanges.

DRG 1 (12): Redwood Road, 700 West, 400 West, 2600 South, 1500 South, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

DRG 2 (12): Redwood Road, 700 West, 400 West, 2600 South, 1500 South, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

DRG 3 (10): 1800 West, 1200 South, 1100 West, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

DRG 4 (10): 1800 West, 1100 West, 1200 South, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

DRG 5 (10): 1800 West, 1200 South, 1100 West, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

ALT E (4): 500 South, Parrish Lane, 1250 West, Glovers Lane

#### Contract Price for Termini Interchanges

|                   | <b>Asphalt</b>     | <b>Base Course</b> |
|-------------------|--------------------|--------------------|
| North Interchange | \$2,260,211        | \$322,085          |
| South Interchange | \$204,370          | \$24,400           |
| <b>Subtotal=</b>  | <b>\$2,464,581</b> | <b>\$346,485</b>   |
| <b>Total=</b>     | <b>\$2,811,066</b> |                    |

#### Cross Streets & Frontage Road widths

| Pavement widths  | (ft) | Quantity | Total (ft) |               |
|------------------|------|----------|------------|---------------|
| Outside Shoulder | 8    | 2        | 16         |               |
| Travel Lanes     | 12   | 2        | 24         |               |
| Median Lane      | 14   | 1        | 14         |               |
|                  |      |          | <b>54</b>  | <b>16.5 m</b> |

Length of arterial (m) 200

**Cul-de-Sac** R=15 m

Pavement Area 700 m<sup>2</sup>

#### Unit Cost

\$/m<sup>2</sup> \$30



| Alt   |        | Cross<br>Streets<br>excluding<br>interchanges | Cross Street<br>Pavement<br>Area (m2) | Frontage<br>Roads (m) | Frontage<br>Roads Area<br>(m2) | Cul-de-<br>sacs | Cul-de-<br>sac Area<br>(m2) | Total<br>Asphalt<br>Pavement<br>Area (m2) |
|-------|--------|---|---------------------------------------|-----------------------|--------------------------------|-----------------|-----------------------------|---|
| DRG 1 |        |   |                                       |                       |                                |                 |                             | <b>91,515</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 4   | 13,200                                | 920                   | 15,180                         | 1               | 700                         | 29,080                                    |
|       | Link 3 | 5   | 16,500                                | 1,140                 | 18,810                         | 13              | 9,100                       | 44,410                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| DRG 2 |        |   |                                       |                       |                                |                 |                             | <b>81,695</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 4   | 13,200                                | 240                   | 3,960                          | 3               | 2,100                       | 19,260                                    |
|       | Link 3 | 5   | 16,500                                | 1,140                 | 18,810                         | 13              | 9,100                       | 44,410                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| DRG 3 |        |   |                                       |                       |                                |                 |                             | <b>54,381</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 0   | 0                                     | 0                     | 0                              | 1               | 700                         | 700                                       |
|       | Link 3 | 7   | 23,100                                | 464                   | 7,656                          | 7               | 4,900                       | 35,656                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| DRG 4 |        |   |                                       |                       |                                |                 |                             | <b>59,308</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 0   | 0                                     | 0                     | 0                              | 1               | 700                         | 700                                       |
|       | Link 3 | 7   | 23,100                                | 805                   | 13,283                         | 6               | 4,200                       | 40,583                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| DRG 5 |        |   |                                       |                       |                                |                 |                             | <b>62,855</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 0   | 0                                     | 0                     | 0                              | 1               | 700                         | 700                                       |
|       | Link 3 | 7   | 23,100                                | 1,020                 | 16,830                         | 6               | 4,200                       | 44,130                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| ALT E |        |   |                                       |                       |                                |                 |                             | <b>87,528</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 0   | 0                                     | 0                     | 0                              | 1               | 700                         | 700                                       |
|       | Link 3 | 1   | 3,300                                 | 3,885                 | 64,103                         | 2               | 1,400                       | 68,803                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |

| Alt    | Total Cost  |
|--------|-------------|
| DRG 1  |             |
| Link 1 | \$228,770   |
| Link 2 | \$872,400   |
| Link 3 | \$1,332,300 |
| Link 4 | \$540,750   |
| Link 5 | \$2,582,296 |
|        | \$5,556,516 |
| DRG 2  |             |
| Link 1 | \$228,770   |
| Link 2 | \$577,800   |
| Link 3 | \$1,332,300 |
| Link 4 | \$540,750   |
| Link 5 | \$2,582,296 |
|        | \$5,261,916 |
| DRG 3  |             |
| Link 1 | \$228,770   |
| Link 2 | \$21,000    |
| Link 3 | \$1,069,680 |
| Link 4 | \$540,750   |
| Link 5 | \$2,582,296 |
|        | \$4,442,496 |
| DRG 4  |             |
| Link 1 | \$228,770   |
| Link 2 | \$21,000    |
| Link 3 | \$1,217,475 |
| Link 4 | \$540,750   |
| Link 5 | \$2,582,296 |
|        | \$4,590,291 |
| DRG 5  |             |
| Link 1 | \$228,770   |
| Link 2 | \$21,000    |
| Link 3 | \$1,323,900 |
| Link 4 | \$540,750   |
| Link 5 | \$2,582,296 |
|        | \$4,696,716 |
| ALT E  |             |
| Link 1 | \$228,770   |
| Link 2 | \$21,000    |
| Link 3 | \$2,064,075 |
| Link 4 | \$540,750   |
| Link 5 | \$2,582,296 |
|        | \$5,436,891 |





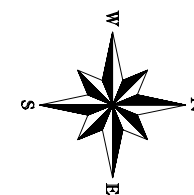
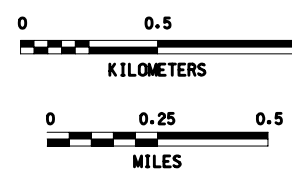
#### LEGEND

- ∨ D&RG 1
- ∨ D&RG 2
- ∨ D&RG 3
- ∨ D&RG 4
- ∨ D&RG 5

∨ ALTERNATIVE E

∨ MUNICIPAL BOUNDARY

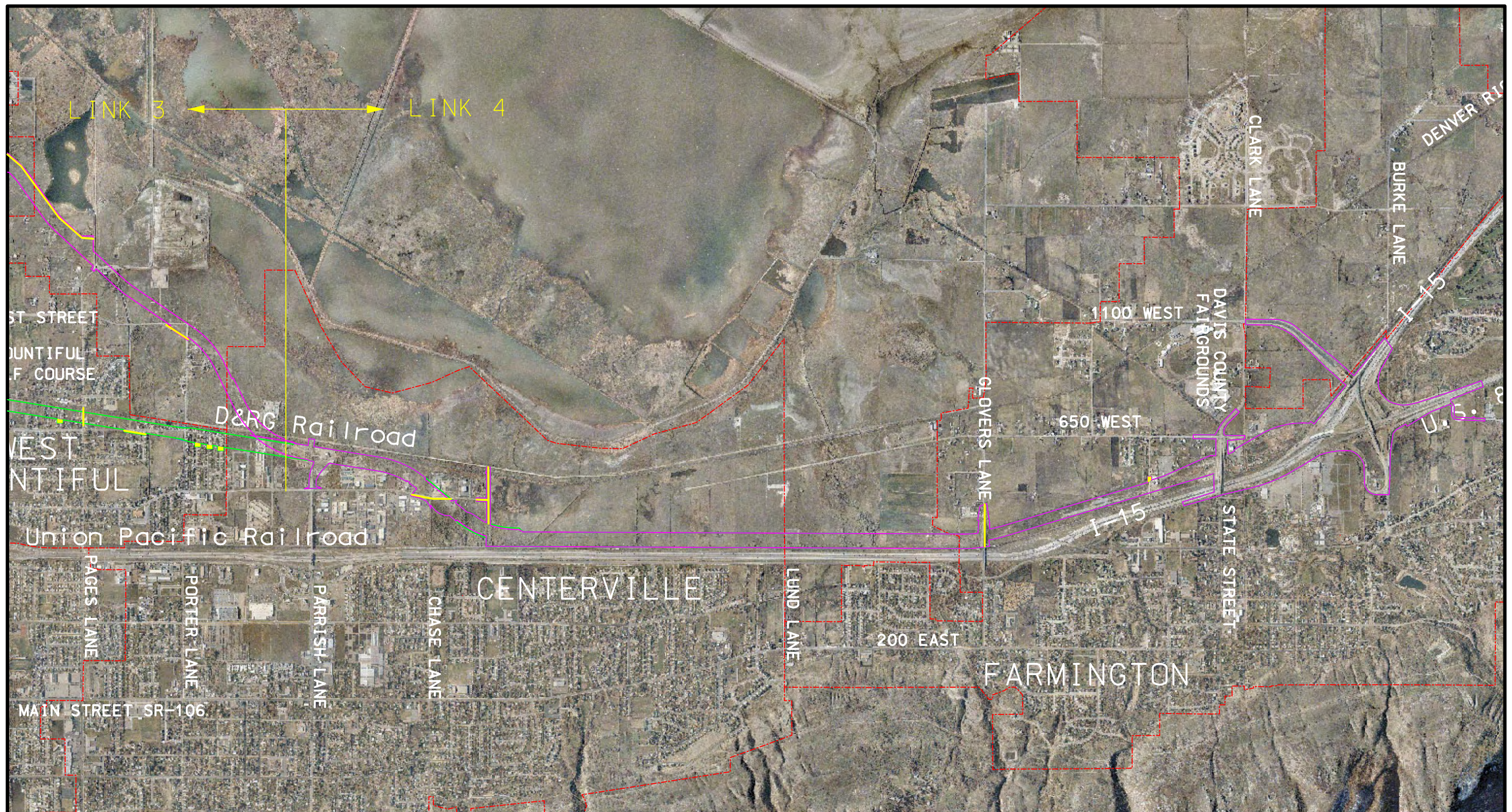
AREA REQUIRING EXCAVATION AND  
ASPHALT PAVEMENT (CROSS STREETS,  
FRONTAGE ROADS, AND CUL-DE-SACS)



#### ATTACHMENT 2 FIGURE 1 ASPHALT PAVEMENT

Legacy Parkway Supplemental EIS  
JUNE 2004





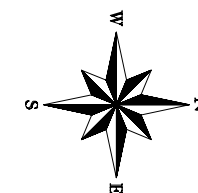
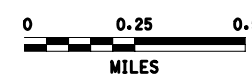
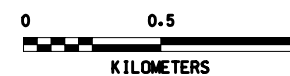
# LEGEND

- ✓ D&RG 1
- ✓ D&RG 2
- ✓ D&RG 3
- ✓ D&RG 4
- ✓ D&RG 5

✓ ALTERNATIVE E

✓ MUNICIPAL BOUNDARY

AREA REQUIRING EXCAVATION AND ASPHALT PAVEMENT (CROSS STREETS, FRONTAGE ROADS, AND CUL-DE-SACS)



## ATTACHMENT 2 FIGURE 2 ASPHALT PAVEMENT

Legacy Parkway Supplemental EIS  
JUNE 2004



|                |                          |                 |     |             |          |
|----------------|--------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS              | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates       | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Trail Pavement Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                          | <b>No.</b>      |     |             |          |

Trail Pavement costs \$14/m2 are based on 2003 UDOT bid items using a 6" asphalt (2.4 m wide) pavement.

#### Unit Cost

|           |      |
|-----------|------|
| \$/m2     | \$14 |
| Width (m) | 2.4  |

Lengths: see Fence.dgn for trail lengths

| Alt          | Length (m) | Area (m2) | Total Cost |
|--------------|------------|-----------|------------|
| <b>DRG 1</b> |            |           |            |
| Link 1       | 0          | 0         | \$0        |
| Link 2       | 4,325      | 10,380    | \$145,320  |
| Link 3       | 5,625      | 13,500    | \$189,000  |
| Link 4       | 6,510      | 15,624    | \$218,736  |
| Link 5       | 0          | 0         | \$0        |
|              |            | 39,504    | \$553,056  |
| <b>DRG 2</b> |            |           |            |
| Link 1       | 0          | 0         | \$0        |
| Link 2       | 4,325      | 10,380    | \$145,320  |
| Link 3       | 5,625      | 13,500    | \$189,000  |
| Link 4       | 6,510      | 15,624    | \$218,736  |
| Link 5       | 0          | 0         | \$0        |
|              |            | 39,504    | \$553,056  |
| <b>DRG 3</b> |            |           |            |
| Link 1       | 0          | 0         | \$0        |
| Link 2       | 3,320      | 7,968     | \$111,552  |
| Link 3       | 7,120      | 17,088    | \$239,232  |
| Link 4       | 6,510      | 15,624    | \$218,736  |
| Link 5       | 0          | 0         | \$0        |
|              |            | 40,680    | \$569,520  |
| <b>DRG 4</b> |            |           |            |
| Link 1       | 0          | 0         | \$0        |
| Link 2       | 3,320      | 7,968     | \$111,552  |
| Link 3       | 6,910      | 16,584    | \$232,176  |
| Link 4       | 6,510      | 15,624    | \$218,736  |
| Link 5       | 0          | 0         | \$0        |
|              |            | 40,176    | \$562,464  |
| <b>DRG 5</b> |            |           |            |
| Link 1       | 0          | 0         | \$0        |
| Link 2       | 3,320      | 7,968     | \$111,552  |
| Link 3       | 6,705      | 16,092    | \$225,288  |
| Link 4       | 6,510      | 15,624    | \$218,736  |
| Link 5       | 0          | 0         | \$0        |
|              |            | 39,684    | \$555,576  |
| <b>ALT E</b> |            |           |            |
| Link 1       | 0          | 0         | \$0        |
| Link 2       | 3,320      | 7,968     | \$111,552  |
| Link 3       | 6,860      | 16,464    | \$230,496  |
| Link 4       | 6,510      | 15,624    | \$218,736  |
| Link 5       | 0          | 0         | \$0        |
|              |            | 40,056    | \$560,784  |

|                |                       |                 |     |             |          |
|----------------|-----------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS           | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates    | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Trail Mulch Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                       | <b>No.</b>      |     |             |          |

Trail Mulch costs \$0.40/m2 are based on 2003 UDOT bid items using a 6" mulch.

#### Unit Cost

|           |        |
|-----------|--------|
| \$/m2     | \$0.40 |
| Width (m) | 2.0    |

Lengths: see Attachment 11 figures

| Alt          | Length (m) | Area (m2) | Total Cost      |
|--------------|------------|-----------|-----------------|
| <b>DRG 1</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 4,325      | 8,650     | <b>\$3,460</b>  |
| Link 3       | 5,625      | 11,250    | <b>\$4,500</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 32,920    | <b>\$13,168</b> |
| <b>DRG 2</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 4,325      | 8,650     | <b>\$3,460</b>  |
| Link 3       | 5,625      | 11,250    | <b>\$4,500</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 32,920    | <b>\$13,168</b> |
| <b>DRG 3</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 3,320      | 6,640     | <b>\$2,656</b>  |
| Link 3       | 7,120      | 14,240    | <b>\$5,696</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 33,900    | <b>\$13,560</b> |
| <b>DRG 4</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 3,320      | 6,640     | <b>\$2,656</b>  |
| Link 3       | 6,910      | 13,820    | <b>\$5,528</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 33,480    | <b>\$13,392</b> |
| <b>DRG 5</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 3,320      | 6,640     | <b>\$2,656</b>  |
| Link 3       | 6,705      | 13,410    | <b>\$5,364</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 33,070    | <b>\$13,228</b> |
| <b>ALT E</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 3,320      | 6,640     | <b>\$2,656</b>  |
| Link 3       | 6,860      | 13,720    | <b>\$5,488</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 33,380    | <b>\$13,352</b> |

|                |                     |                 |    |             |          |
|----------------|---------------------|-----------------|----|-------------|----------|
| <b>Project</b> | Legacy SEIS         | <b>Computed</b> | TW | <b>Date</b> | 5/1/2004 |
| <b>Subject</b> | DRG Cost Estimates  | <b>Checked</b>  |    | <b>Date</b> |          |
| <b>Task</b>    | Earthwork Estimates | <b>Sheet</b>    |    | <b>Of</b>   |          |
| <b>Job No.</b> |                     | <b>No.</b>      |    |             |          |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

|                   |                     |
|-------------------|---------------------|
|                   | Total Cost          |
| North Interchange | \$18,701,079        |
| South Interchange | \$14,518,266        |
| <b>Total=</b>     | <b>\$33,219,345</b> |

#### Unit Cost

|                      |              |                                |
|----------------------|--------------|--------------------------------|
| Southern Interchange |              | \$11.76                        |
| Northern Interchange |              | \$10.43                        |
| Mainline Sections    | near 500 S.  | \$9.59                         |
|                      | near Glovers | \$7.53                         |
|                      |              | <u>\$9.83</u> average mainline |

Approx. distance (D) to attain grade separation 350 m, According to ASSHTO, Exhibit 10-8 for flat terrain.  
both approaches 700 m

#### Cross sectional Area

|                 |                        |                     |           |
|-----------------|------------------------|---------------------|-----------|
| fill height (m) | ft                     | Area m <sup>2</sup> |           |
| 2               | 6.0                    | 104                 | Section B |
| 6               | 20.0                   | 345                 | Section A |
|                 | Average m <sup>2</sup> | <b>230</b>          |           |

Structures excluding interchanges are for crossing streets, RR crossings, and Mill Creek.

| Alt          | Length Excluding<br>Termini<br>Interchanges (m) | Structures,<br>Excluding<br>Interchanges | Structure<br>Length,<br>approx. (m) | Length on<br>Structure (m) | Net Length (m) |
|--------------|---|--|-------------------------------------|----------------------------|----------------|
| <b>DRG 1</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 0                                   | 0                          | 0              |
| Link 2       | 4,325   | 3  | 55                                  | 165                        | 4,160          |
| Link 3       | 5,625   | 6  | 55                                  | 330                        | 5,295          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 0                                   | 0                          | 0              |
| <b>DRG 2</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 4,325   | 3  | 55                                  | 165                        | 4,160          |
| Link 3       | 5,625   | 6  | 55                                  | 330                        | 5,295          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |
| <b>DRG 3</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 3,320   | 0  | 55                                  | 0                          | 3,320          |
| Link 3       | 7,120   | 7  | 55                                  | 385                        | 6,735          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |
| <b>DRG 4</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 3,320   | 0  | 55                                  | 0                          | 3,320          |
| Link 3       | 6,910   | 7  | 55                                  | 385                        | 6,525          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |
| <b>DRG 5</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 3,320   | 0  | 55                                  | 0                          | 3,320          |
| Link 3       | 6,705   | 7  | 55                                  | 385                        | 6,320          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |
| <b>ALT E</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 3,320   | 0  | 55                                  | 0                          | 3,320          |
| Link 3       | 6,860   | 1  | 55                                  | 55                         | 6,805          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |

|                |                     |                 |    |             |          |
|----------------|---------------------|-----------------|----|-------------|----------|
| <b>Project</b> | Legacy SEIS         | <b>Computed</b> | TW | <b>Date</b> | 5/1/2004 |
| <b>Subject</b> | DRG Cost Estimates  | <b>Checked</b>  |    | <b>Date</b> |          |
| <b>Task</b>    | Earthwork Estimates | <b>Sheet</b>    |    | <b>Of</b>   |          |
| <b>Job No.</b> |                     | <b>No.</b>      |    |             |          |

**Lengths of Elevated Fill, See Earthwork Figure 1 and Figure 2**

|        | DRG1  | DRG2  | DRG3  | DRG4  | DRG5  | ALT E |
|--------|-------|-------|-------|-------|-------|-------|
| Link 1 | 0     | 0     | 0     | 0     | 0     | 0     |
| Link 2 | 2,100 | 1,182 | 0     | 0     | 0     | 0     |
| Link 3 | 4,200 | 4,200 | 4,995 | 4,765 | 4,125 | 700   |
| Link 4 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 |
| Link 5 | 0     | 0     | 0     | 0     | 0     | 0     |
|        | 7,700 | 6,782 | 6,395 | 6,165 | 5,525 | 2,100 |

**Fill Volumes**

At Elevated Sections for Street Crossings

| Alt          | Approx. Length of<br>Alignment elevated<br>for Cross Streets (m) | Cross Sectional<br>Area at<br>crossing streets<br>(m <sup>2</sup> ) | Fill volume for<br>crossing<br>streets (m <sup>3</sup> ) |
|--------------|--|---|--|
| <b>DRG 1</b> |  |   |  |
| Link 1       | 0  | 230   | 0  |
| Link 2       | 2,100  | 230   | 483,000  |
| Link 3       | 4,200  | 230   | 966,000  |
| Link 4       | 1,400  | 230   | 322,000  |
| Link 5       | 0  | 230   | 0  |
|              |  |   | 1,771,000  |
| <b>DRG 2</b> |  |   |  |
| Link 1       | 0  | 230   | 0  |
| Link 2       | 1,182  | 230   | 271,860  |
| Link 3       | 4,200  | 230   | 966,000  |
| Link 4       | 1,400  | 230   | 322,000  |
| Link 5       | 0  | 230   | 0  |
|              |  |   | 1,559,860  |
| <b>DRG 3</b> |  |   |  |
| Link 1       | 0  | 230   | 0  |
| Link 2       | 0  | 230   | 0  |
| Link 3       | 4,995  | 230   | 1,148,850  |
| Link 4       | 1,400  | 230   | 322,000  |
| Link 5       | 0  | 230   | 0  |
|              |  |   | 1,470,850  |
| <b>DRG 4</b> |  |   |  |
| Link 1       | 0  | 230   | 0  |
| Link 2       | 0  | 230   | 0  |
| Link 3       | 4,765  | 230   | 1,095,950  |
| Link 4       | 1,400  | 230   | 322,000  |
| Link 5       | 0  | 230   | 0  |
|              |  |   | 1,417,950  |
| <b>DRG 5</b> |  |   |  |
| Link 1       | 0  | 230   | 0  |
| Link 2       | 0  | 230   | 0  |
| Link 3       | 4,125  | 230   | 948,750  |
| Link 4       | 1,400  | 230   | 322,000  |
| Link 5       | 0  | 230   | 0  |
|              |  |   | 1,270,750  |
| <b>ALT E</b> |  |   |  |
| Link 1       | 0  | 230   | 0  |
| Link 2       | 0  | 230   | 0  |
| Link 3       | 700  | 230   | 161,000  |
| Link 4       | 1,400  | 230   | 322,000  |
| Link 5       | 0  | 230   | 0  |
|              |  |   | 483,000  |



|                |                     |                 |    |             |          |
|----------------|---------------------|-----------------|----|-------------|----------|
| <b>Project</b> | Legacy SEIS         | <b>Computed</b> | TW | <b>Date</b> | 5/1/2004 |
| <b>Subject</b> | DRG Cost Estimates  | <b>Checked</b>  |    | <b>Date</b> |          |
| <b>Task</b>    | Earthwork Estimates | <b>Sheet</b>    |    | <b>Of</b>   |          |
| <b>Job No.</b> |                     | <b>No.</b>      |    |             |          |

## Mainline at Average, 2m, Sections

| Alt          | Length Excluding<br>Termini<br>Interchanges (m) | Net Length (m) | Length at<br>average (2-m)<br>fill height (m) | Cross Sectional<br>Area, 2-m fill<br>height (m <sup>2</sup> ) | Fill Volume for<br>Average<br>Section(m <sup>3</sup> ) |
|--------------|---|----------------|---|---|--|
| <b>DRG 1</b> |   |                |   |   |  |
| Link 1       | 0   | 0              | 0   | 104   | 0  |
| Link 2       | 4,325   | 4,160          | 2,060   | 104   | 214,240  |
| Link 3       | 5,625   | 5,295          | 1,095   | 104   | 113,880  |
| Link 4       | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5       | 0   | 0              | 0   | 104   | 0  |
| <b>DRG 2</b> |   |                |   |   |  |
| Link 1       | 0   | 0              | 0   | 104   | 0  |
| Link 2       | 4,325   | 4,160          | 2,978   | 104   | 309,712  |
| Link 3       | 5,625   | 5,295          | 1,095   | 104   | 113,880  |
| Link 4       | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5       | 0   | 0              | 0   | 104   | 0  |
| <b>DRG 3</b> |   |                |   |   |  |
| Link 1       | 0   | 0              | 0   | 104   | 0  |
| Link 2       | 3,320   | 3,320          | 3,320   | 104   | 345,280  |
| Link 3       | 7,120   | 6,735          | 1,740   | 104   | 180,960  |
| Link 4       | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5       | 0   | 0              | 0   | 104   | 0  |
| <b>DRG 4</b> |   |                |   |   |  |
| Link 1       | 0   | 0              | 0   | 104   | 0  |
| Link 2       | 3,320   | 3,320          | 3,320   | 104   | 345,280  |
| Link 3       | 6,910   | 6,525          | 1,760   | 104   | 183,040  |
| Link 4       | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5       | 0   | 0              | 0   | 104   | 0  |
| <b>DRG 5</b> |   |                |   |   |  |
| Link 1       | 0   | 0              | 0   | 104   | 0  |
| Link 2       | 3,320   | 3,320          | 3,320   | 104   | 345,280  |
| Link 3       | 6,705   | 6,320          | 2,195   | 104   | 228,280  |
| Link 4       | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5       | 0   | 0              | 0   | 104   | 0  |
| <b>ALT E</b> |   |                |   |   |  |
| Link 1       | 0   | 0              | 0   | 104   | 0  |
| Link 2       | 3,320   | 3,320          | 3,320   | 104   | 345,280  |
| Link 3       | 6,860   | 6,805          | 6,105   | 104   | 634,920  |
| Link 4       | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5       | 0   | 0              | 0   | 104   | 0  |

|                |                     |                 |    |             |          |
|----------------|---------------------|-----------------|----|-------------|----------|
| <b>Project</b> | Legacy SEIS         | <b>Computed</b> | TW | <b>Date</b> | 5/1/2004 |
| <b>Subject</b> | DRG Cost Estimates  | <b>Checked</b>  |    | <b>Date</b> |          |
| <b>Task</b>    | Earthwork Estimates | <b>Sheet</b>    |    | <b>Of</b>   |          |
| <b>Job No.</b> |                     | <b>No.</b>      |    |             |          |

**Estimated Cost**

| Alt          | Total Fill Volume<br>(m <sup>3</sup> ) | Unit Cost | Cost<br>(Excluding<br>Termini<br>Interchanges) | Cost of Termini<br>Interchanges | Total Cost   |
|--------------|--|-----------|--|---------------------------------|--------------|
| <b>DRG 1</b> |  |           |  |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0  | \$14,518,266                    | \$14,600,000 |
| Link 2       | 697,240                                | \$9.83    | \$6,853,869                                    | \$0                             | \$6,900,000  |
| Link 3       | 1,079,880                              | \$9.83    | \$10,615,220                                   | \$0                             | \$10,700,000 |
| Link 4       | 836,280                                | \$9.83    | \$8,220,632                                    | \$0                             | \$8,300,000  |
| Link 5       | 0                                      | \$9.83    | \$0  | \$18,701,079                    | \$18,800,000 |
|              | 2,613,400                              |           |  |                                 | \$59,300,000 |
| <b>DRG 2</b> |  |           |  |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0  | \$14,518,266                    | \$14,600,000 |
| Link 2       | 581,572                                | \$9.83    | \$5,716,853                                    | \$0                             | \$5,800,000  |
| Link 3       | 1,079,880                              | \$9.83    | \$10,615,220                                   | \$0                             | \$10,700,000 |
| Link 4       | 836,280                                | \$9.83    | \$8,220,632                                    | \$0                             | \$8,300,000  |
| Link 5       | 0                                      | \$9.83    | \$0  | \$18,701,079                    | \$18,800,000 |
|              | 2,497,732                              |           |  |                                 | \$58,200,000 |
| <b>DRG 3</b> |  |           |  |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0  | \$14,518,266                    | \$14,600,000 |
| Link 2       | 345,280                                | \$9.83    | \$3,394,102                                    | \$0                             | \$3,400,000  |
| Link 3       | 1,329,810                              | \$9.83    | \$13,072,032                                   | \$0                             | \$13,100,000 |
| Link 4       | 836,280                                | \$9.83    | \$8,220,632                                    | \$0                             | \$8,300,000  |
| Link 5       | 0                                      | \$9.83    | \$0  | \$18,701,079                    | \$18,800,000 |
|              | 2,511,370                              |           |  |                                 | \$58,200,000 |
| <b>DRG 4</b> |  |           |  |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0  | \$14,518,266                    | \$14,600,000 |
| Link 2       | 345,280                                | \$9.83    | \$3,394,102                                    | \$0                             | \$3,400,000  |
| Link 3       | 1,278,990                              | \$9.83    | \$12,572,472                                   | \$0                             | \$12,600,000 |
| Link 4       | 836,280                                | \$9.83    | \$8,220,632                                    | \$0                             | \$8,300,000  |
| Link 5       | 0                                      | \$9.83    | \$0  | \$18,701,079                    | \$18,800,000 |
|              | 2,460,550                              |           |  |                                 | \$57,700,000 |
| <b>DRG 5</b> |  |           |  |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0  | \$14,518,266                    | \$14,600,000 |
| Link 2       | 345,280                                | \$9.83    | \$3,394,102                                    | \$0                             | \$3,400,000  |
| Link 3       | 1,177,030                              | \$9.83    | \$11,570,205                                   | \$0                             | \$11,600,000 |
| Link 4       | 836,280                                | \$9.83    | \$8,220,632                                    | \$0                             | \$8,300,000  |
| Link 5       | 0                                      | \$9.83    | \$0  | \$18,701,079                    | \$18,800,000 |
|              | 2,358,590                              |           |  |                                 | \$56,700,000 |
| <b>ALT E</b> |  |           |  |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0  | \$14,518,266                    | \$14,600,000 |
| Link 2       | 345,280                                | \$9.83    | \$3,394,102                                    | \$0                             | \$3,400,000  |
| Link 3       | 795,920                                | \$9.83    | \$7,823,894                                    | \$0                             | \$7,900,000  |
| Link 4       | 836,280                                | \$9.83    | \$8,220,632                                    | \$0                             | \$8,300,000  |
| Link 5       | 0                                      | \$9.83    | \$0  | \$18,701,079                    | \$18,800,000 |
|              | 1,977,480                              |           |  |                                 | \$53,000,000 |

Total Fill volume equals volume for elevated sections, for average fill height sections, and for frontage roads, cul-de-sacs, and Cross Streets.



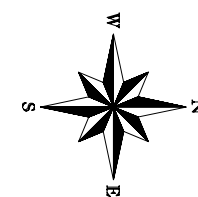


#### LEGEND

- |   |   |
|---|---|
| <span style="color: blue;">—</span> D&RG 1      | <span style="color: magenta;">—</span> ALTERNATIVE E                                  |
| <span style="color: cyan;">—</span> D&RG 2      | <span style="color: red;">—</span> MUNICIPAL BOUNDARY                                 |
| <span style="color: orange;">—</span> D&RG 3    | <span style="color: yellow;">—</span> AREAS WITH ADDITIONAL FILL FOR STREET CROSSINGS |
| <span style="color: lightblue;">—</span> D&RG 4 | <span style="color: red;">●</span> STRUCTURE LOCATION                                 |
| <span style="color: green;">—</span> D&RG 5     |   |

0 0.5 1  
KILOMETERS

0 0.25 0.5  
MILES



#### ATTACHMENT 5 FIGURE 1 EARTHWORK

Legacy Parkway Supplemental EIS  
JUNE 2004



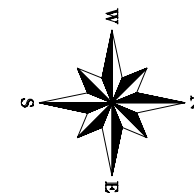


# LEGEND

- |  |        |  |   |
|--|--------|--|---|
|  | D&RG 1 |  | ALTERNATIVE E                                   |
|  | D&RG 2 |  | MUNICIPAL BOUNDARY                              |
|  | D&RG 3 |  | AREAS WITH ADDITIONAL FILL FOR STREET CROSSINGS |
|  | D&RG 4 |  | STRUCTURE LOCATION                              |
|  | D&RG 5 |  |   |

0 0.5 1  
KILOMETERS

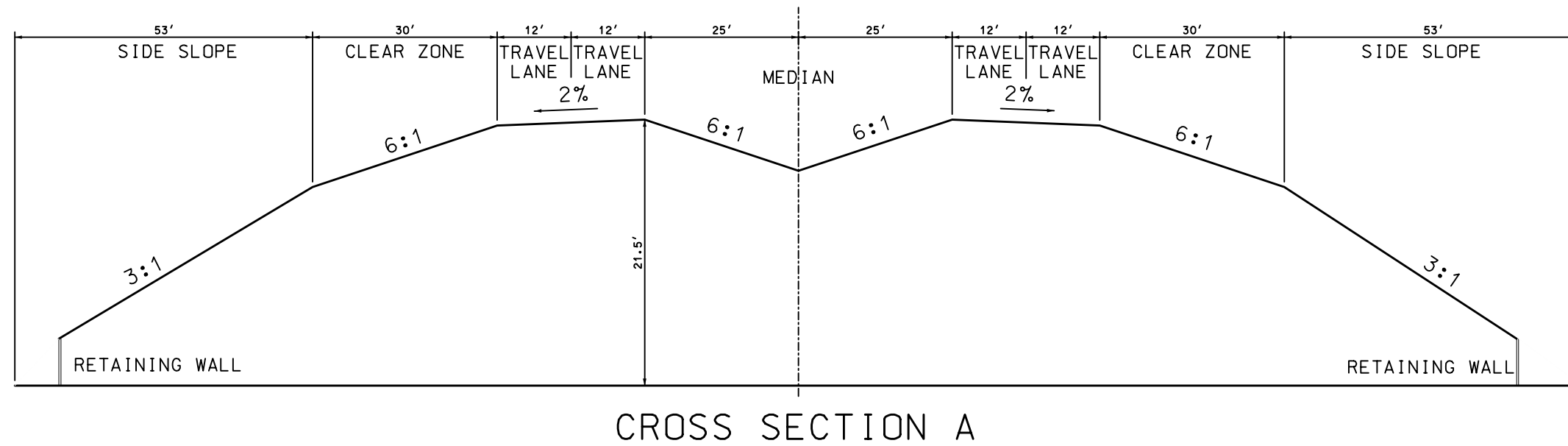
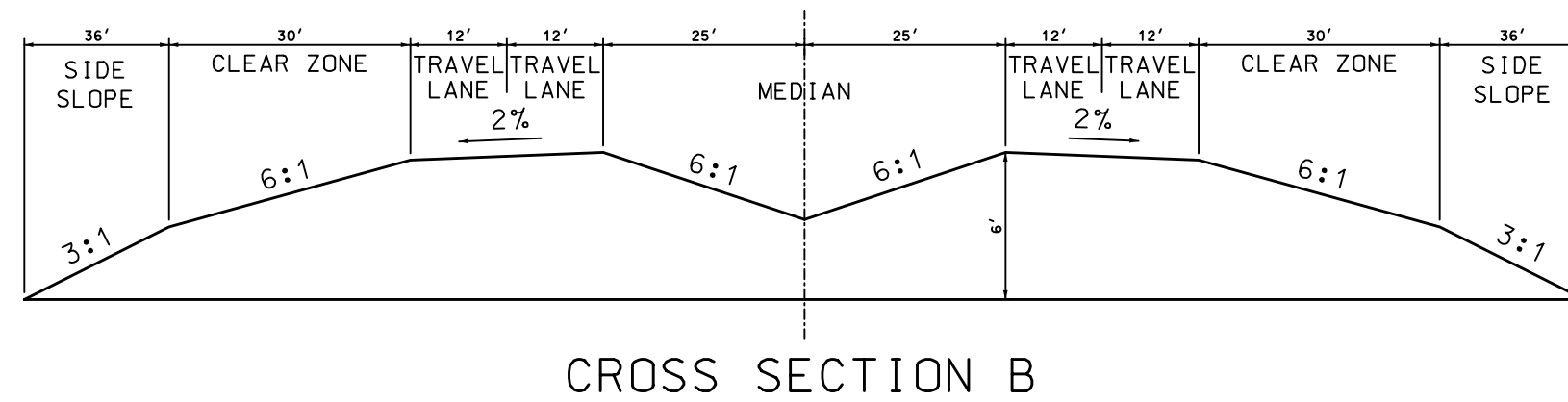
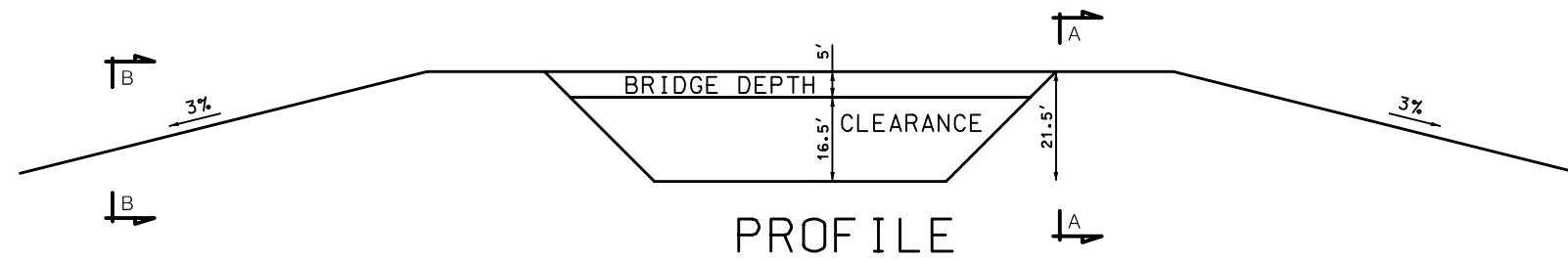
0 0.25 0.5  
MILES



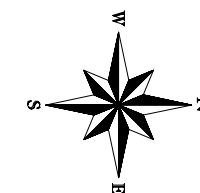
## ATTACHMENT 5 FIGURE 2 EARTHWORK

Legacy Parkway Supplemental EIS  
JUNE 2004





LEGEND



ATTACHMENT 5  
FIGURE 3  
EARTHWORK

|                |                            |                 |    |             |          |
|----------------|----------------------------|-----------------|----|-------------|----------|
| <b>Project</b> | Legacy SEIS                | <b>Computed</b> | TW | <b>Date</b> | 5/1/2004 |
| <b>Subject</b> | DRG Cost Estimates         | <b>Checked</b>  |    | <b>Date</b> |          |
| <b>Task</b>    | Concrete Barrier Estimates | <b>Sheet</b>    |    | <b>Of</b>   |          |
| <b>Job No.</b> |                            | <b>No.</b>      |    |             |          |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

**Contract Price for Termini Interchanges**

|                   |             |                |            |
|-------------------|-------------|----------------|------------|
| North Interchange | \$1,327,066 | \$1,327,066.00 | Link 5 All |
| South Interchange | \$980,982   | \$980,982.00   | Link 1 All |

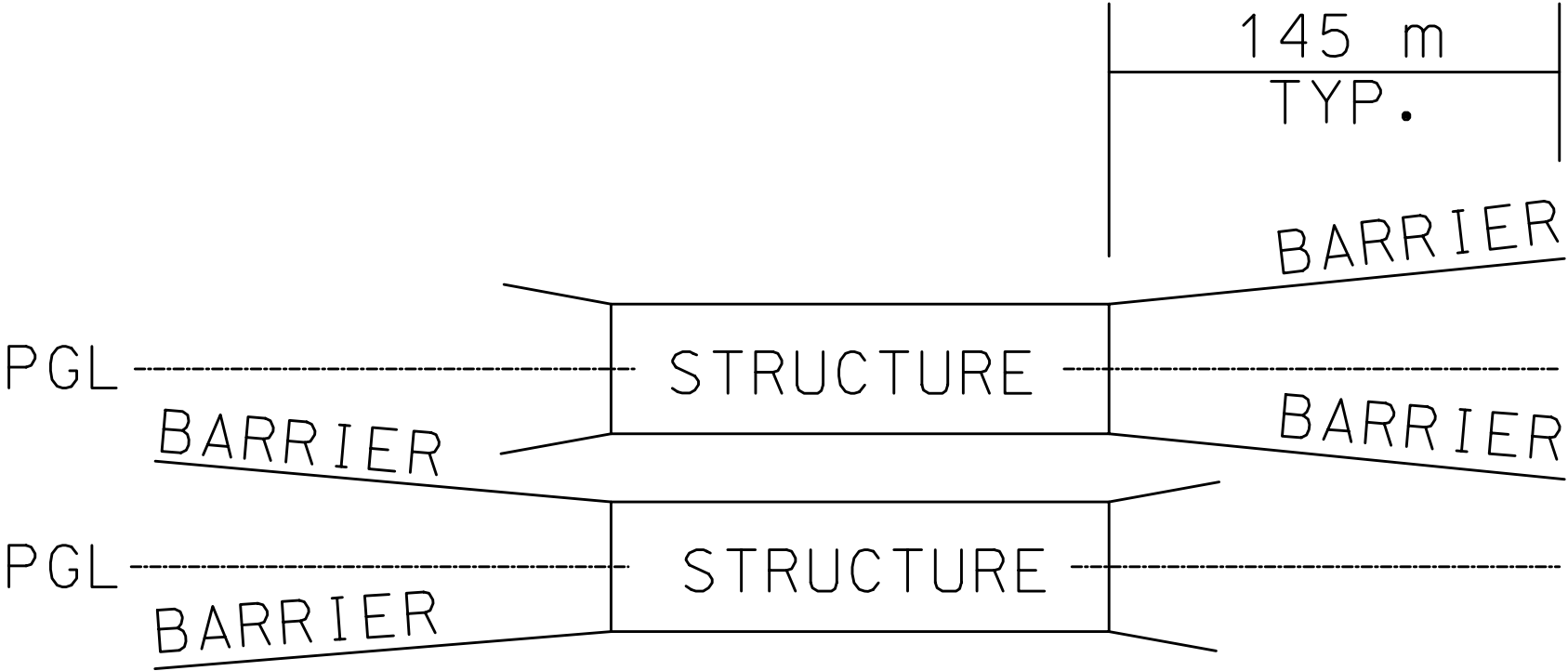
**Total= \$2,308,048**

|                |     |  |
|----------------|-----|--|
| Barrier Length | 145 | runout length in meters, AASHTO 2002, Table 5.8 @ 70 mph |
| Unit cost      | 112 | \$/m 2003 UDOT Bid item 028410080                        |
| lengths        | 4   | two approaches with barrier outside and inside           |

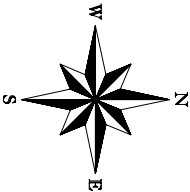
Interior Structures include crossing streets, RR crossing and Mill Creek.

| Alt   | Links | Interior Structures (obstacle) | length (m) | Cost Excluding Termini Interchanges |
|-------|-------|--------------------------------|------------|-------------------------------------|
| DRG 1 | 2     | 4                              | 2320       | \$259,840                           |
|       | 3     | 6                              | 3480       | \$389,760                           |
| DRG 2 | 2     | 4                              | 2320       | \$259,840                           |
|       | 3     | 6                              | 3480       | \$389,760                           |
| DRG 3 | 2     | 0                              | 0          | \$0                                 |
|       | 3     | 8                              | 4640       | \$519,680                           |
| DRG 4 | 2     | 0                              | 0          | \$0                                 |
|       | 3     | 9                              | 5220       | \$584,640                           |
| DRG 5 | 2     | 0                              | 0          | \$0                                 |
|       | 3     | 8                              | 4640       | \$519,680                           |
| ALT E | 2     | 0                              | 0          | \$0                                 |
|       | 3     | 2                              | 1160       | \$129,920                           |
| ALL   | 4     | 3                              | 1740       | \$194,880                           |

# BARRIER DETAIL



LEGEND



ATTACHMENT 6  
FIGURE 1  
BARRIER

|                |                    |                 |    |             |           |
|----------------|--------------------|-----------------|----|-------------|-----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | TW | <b>Date</b> | 5/12/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |    | <b>Date</b> |           |
| <b>Task</b>    | Noise Walls        | <b>Sheet</b>    |    | <b>Of</b>   |           |
| <b>Job No.</b> |                    | <b>No.</b>      |    |             |           |

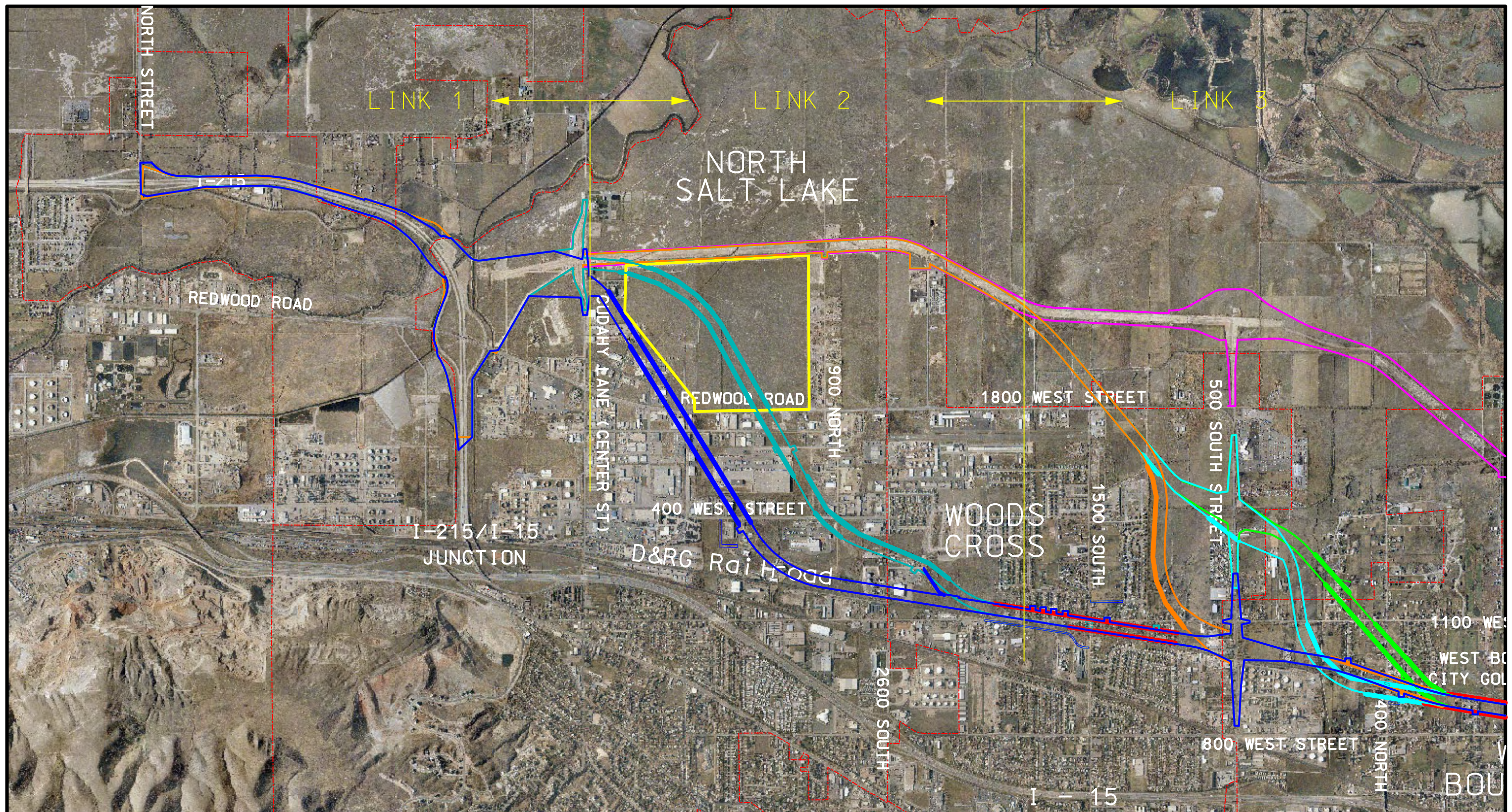
Noise walls (12') are placed along residential areas, parks, and the golf course.

**Unit Cost**            **350 \$/m**                    per UDOT direction

### Noise Walls Lengths

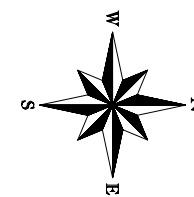
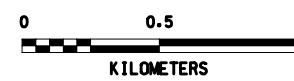
|                  | ALT E      | DRG 1              | DRG 2              | DRG 3              | DRG 4              | DRG 5              |
|------------------|------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Link 2           | 0          | 1501               | 555                | 0                  | 0                  | 0                  |
|                  |            | 801                | 258                |                    |                    |                    |
|                  |            | 216                | 1301               |                    |                    |                    |
|                  |            | 1155               | 216                |                    |                    |                    |
|                  |            |                    | 3064               |                    |                    |                    |
| Total            | 0          | 3673               | 5394               | 0                  | 0                  | 0                  |
| Cost             | \$0        | \$1,285,550        | \$1,887,900        | \$0                | \$0                | \$0                |
| Link 3           | 0          | 1121               | 1121               |                    |                    | 1145               |
|                  |            | 774                | 774                | 1235               | 182                | 182                |
|                  |            | 806                | 806                | 806                | 270                | 270                |
|                  |            | 527                | 527                | 527                | 1215               | 378                |
|                  |            | 2039               | 2039               | 2039               | 2602               | 2120               |
|                  |            | 816                | 816                | 816                | 816                | 816                |
|                  |            | 523                | 523                | 523                | 523                | 554                |
|                  |            | 64                 | 64                 | 64                 |                    | 695                |
| Total            | 0          | 6670               | 6670               | 6010               | 5608               | 6160               |
| Cost             | \$0        | \$2,334,500        | \$2,334,500        | \$2,103,500        | \$1,962,800        | \$2,156,000        |
| <b>Tot. Cost</b> | <b>\$0</b> | <b>\$3,620,050</b> | <b>\$4,222,400</b> | <b>\$2,103,500</b> | <b>\$1,962,800</b> | <b>\$2,156,000</b> |





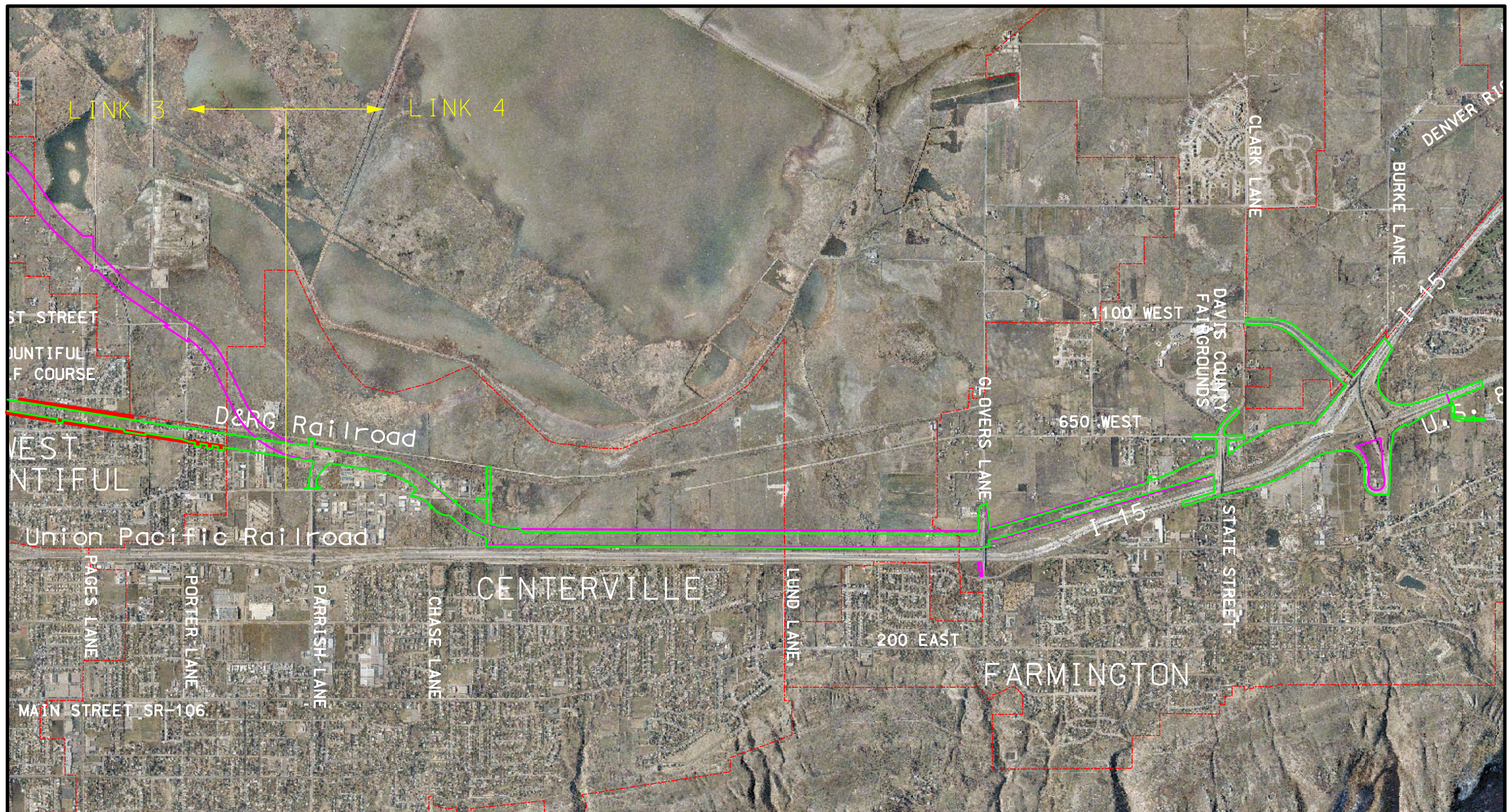
# LEGEND

- ↗ D&RG 1
- ↗ D&RG 2
- ↗ D&RG 3
- ↗ D&RG 4
- ↗ D&RG 5
- ↗ ALTERNATIVE E
- ↗ MUNICIPAL BOUNDARY
- NOISE WALLS
- FOXBORO DEVELOPMENT



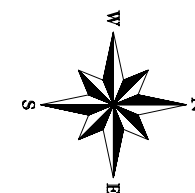
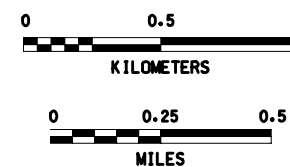
ATTACHMENT 7  
FIGURE 1  
NOISE WALLS





# LEGEND

- |          |                      |
|----------|----------------------|
| ✓ D&RG 1 | ✓ ALTERNATIVE E      |
| ✓ D&RG 2 | ✓ MUNICIPAL BOUNDARY |
| ✓ D&RG 3 | ✓ NOISE WALLS        |
| ✓ D&RG 4 |                      |
| ✓ D&RG 5 |                      |



## ATTACHMENT 7 FIGURE 2 NOISE WALLS



|         |                          |          |    |      |           |
|---------|--------------------------|----------|----|------|-----------|
| Project | Legacy SEIS              | Computed | TW | Date | 2/14/2004 |
| Subject | DRG Cost Estimates       | Checked  |    | Date |           |
| Task    | Retaining Wall Estimates | Sheet    |    | Of   |           |
| Job No. |                          | No.      |    |      |           |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

### Contract Price for Termini Interchanges

|               |                   |                     |         |    |                             |
|---------------|-------------------|---------------------|---------|----|-----------------------------|
| Link 5 All    | North Interchange | \$12,440,356        | 37,281  | M2 | \$333.69 per m <sup>2</sup> |
| Link 1 All    | South Interchange | \$621,432           | 1,661   | M2 | \$374.13 per m <sup>2</sup> |
| <b>Total=</b> |                   | <b>\$13,061,788</b> | Average |    | \$350.00                    |

250 (m) Length of retaining wall approaching each cross street  
500 (m) for both sides of cross street

### Lengths

| DRG1               | DRG2               | DRG3               | DRG4               | DRG5               | ALT E            |           |
|--------------------|--------------------|--------------------|--------------------|--------------------|------------------|-----------|
| 675                | 675                | 0                  | 0                  | 0                  | 0                | Link 2    |
| 500                | 500                |                    |                    |                    |                  |           |
| 500                | 500                |                    |                    |                    |                  |           |
| 1675               | 1675               | 0                  | 0                  | 0                  | 0                | Total     |
| <b>\$2,931,250</b> | <b>\$2,931,250</b> | <b>\$0</b>         | <b>\$0</b>         | <b>\$0</b>         | <b>\$0</b>       | Cost      |
| 500                | 500                | 908                | 908                | 908                | 0                | Link 3    |
| 500                | 500                | 915                | 1368               | 741                |                  |           |
| 921                | 921                | 921                | 500                | 500                |                  |           |
| 500                | 500                | 500                | 500                | 500                |                  |           |
| 500                | 500                | 500                |                    |                    |                  |           |
| 2921               | 2921               | 3744               | 3276               | 2649               | 0                | Total     |
| <b>\$5,111,750</b> | <b>\$5,111,750</b> | <b>\$6,552,000</b> | <b>\$5,733,000</b> | <b>\$4,635,750</b> | <b>\$0</b>       | Cost      |
| 500                | 500                | 500                | 500                | 500                | 500              | Link 4    |
| <b>\$875,000</b>   | <b>\$875,000</b>   | <b>\$875,000</b>   | <b>\$875,000</b>   | <b>\$875,000</b>   | <b>\$875,000</b> | Cost      |
| 5096               | 5096               | 4244               | 3776               | 3149               | 500              | Total 2-4 |

### Costs

2 Both sides of ROW  
2.5 (m) average height

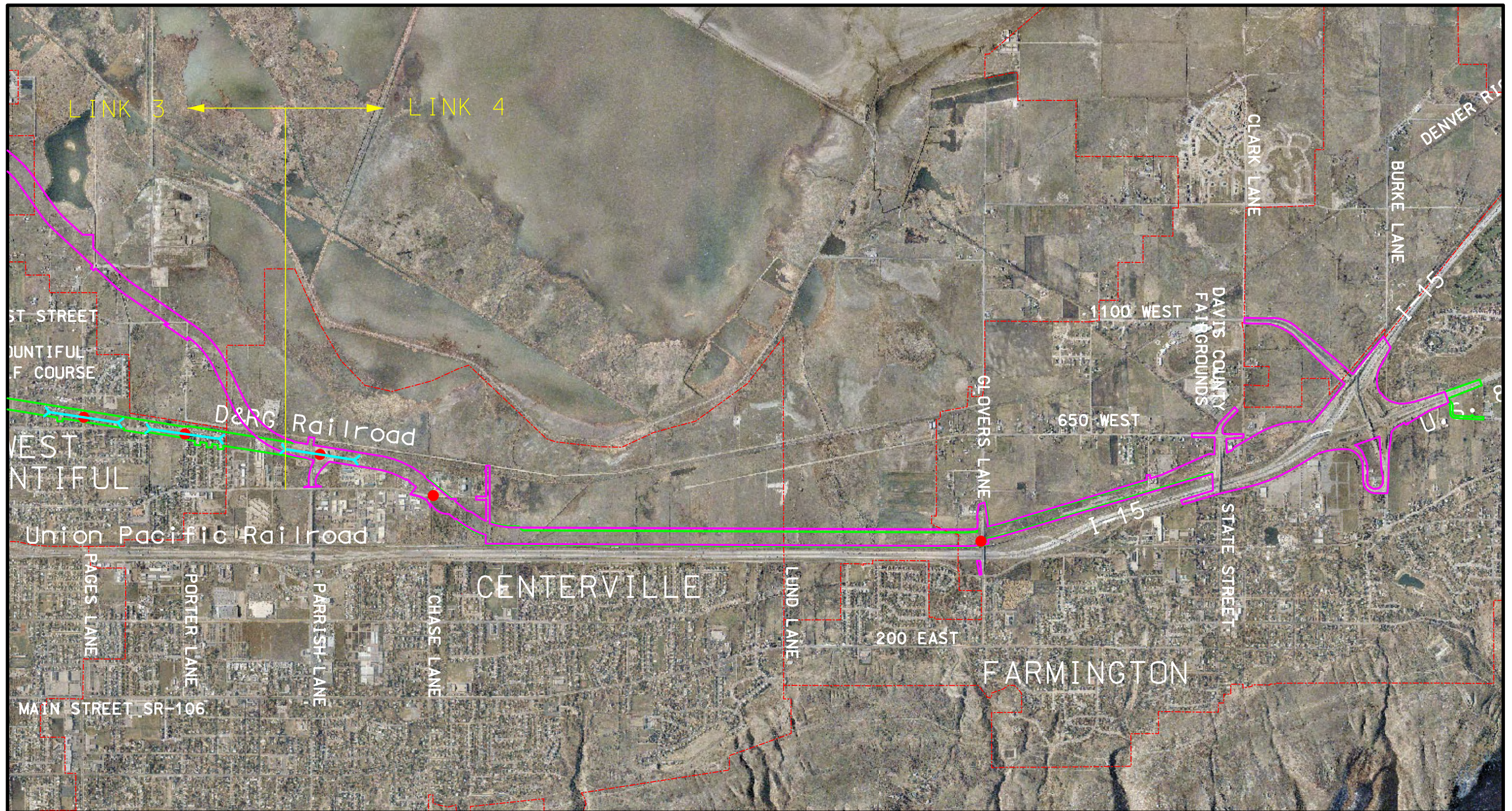
| Alt   | length (m) | Area (m <sup>2</sup> ) | Cost excluding interchanges | Cost of Termini Interchanges | Total Cost          |
|-------|------------|------------------------|-----------------------------|------------------------------|---------------------|
| DRG 1 | 5,096      | 25,480                 | \$8,918,000                 | \$13,061,788                 | <b>\$21,979,788</b> |
| DRG 2 | 5,096      | 25,480                 | \$8,918,000                 | \$13,061,788                 | <b>\$21,979,788</b> |
| DRG 3 | 4,244      | 21,220                 | \$7,427,000                 | \$13,061,788                 | <b>\$20,488,788</b> |
| DRG 4 | 3,776      | 18,880                 | \$6,608,000                 | \$13,061,788                 | <b>\$19,669,788</b> |
| DRG 5 | 3,149      | 15,745                 | \$5,510,750                 | \$13,061,788                 | <b>\$18,572,538</b> |
| ALT E | 500        | 2,500                  | \$875,000                   | \$13,061,788                 | <b>\$13,936,788</b> |





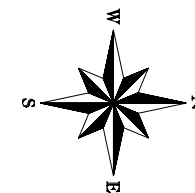
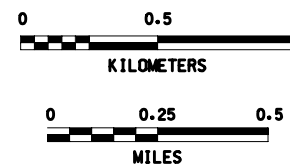
ATTACHMENT 8  
FIGURE 1  
RETAINING WALLS





# LEGEND

- |  |        |  |   |
|--|--------|--|---|
|  | D&RG 1 |  | ALTERNATIVE E   |
|  | D&RG 2 |  | MUNICIPAL BOUNDARY  |
|  | D&RG 3 |  | RETAINING WALLS REQUIRED<br>(ALONG BOTH SIDES OF R.O.W. WHERE<br>FILL HEIGHTS ARE GREATER THAN 15 FEET) |
|  | D&RG 4 |  | STRUCTURE LOCATION  |
|  | D&RG 5 |  |   |



ATTACHMENT 8  
FIGURE 2  
RETAINING WALLS



|                |                    |                 |    |             |           |
|----------------|--------------------|-----------------|----|-------------|-----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | TW | <b>Date</b> | 5/13/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |    | <b>Date</b> |           |
| <b>Task</b>    | Structures Cost    | <b>Sheet</b>    |    | <b>Of</b>   |           |
| <b>Job No.</b> |                    | <b>No.</b>      |    |             |           |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

Legacy goes over cross streets for the D&RG alternatives. Cross Streets go over Legacy for Alternative E.

#### Contract Price for Termini Interchanges

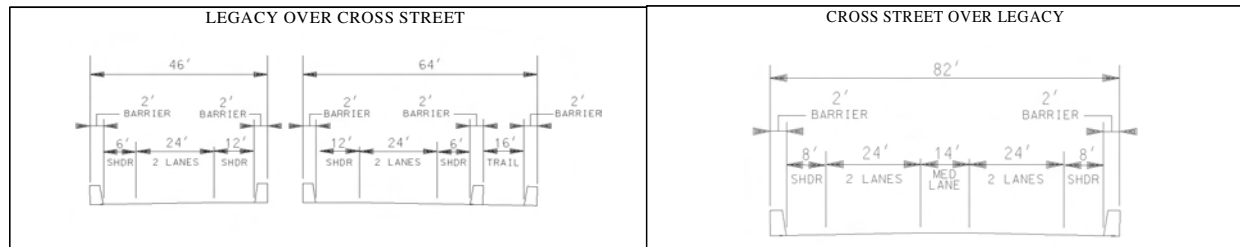
|                   |                     |        |
|-------------------|---------------------|--------|
| North Interchange | \$45,585,413        | Link 5 |
| South Interchange | \$9,522,340         | Link 1 |
| <b>Total=</b>     | <b>\$55,107,753</b> |        |

#### Contract Unit Cost

|                                      | structure area                     |
|--------------------------------------|------------------------------------|
| Piles: \$5,888,955                   | 5694                               |
| Materials: \$19,872,131              | 3003                               |
| Set Up: \$2,208,000                  | 4393                               |
| Excavation: \$321,962                | 6491                               |
| Reinforcing Steel: \$6,527,653       | 3274                               |
| Substructure Concrete: \$3,951,963   | 3455                               |
| Superstructure Concrete: \$4,349,733 | 4631                               |
| Approach Slab Concrete: \$645,650    | 1692                               |
| Bridge Rails: \$505,450              | 2990                               |
| Bridge Overlay: \$973,625            | 1357                               |
| Bridge Concrete Stain: \$16,711      |                                    |
| Bridge Drain System: \$280,000       |                                    |
| Bridge Slope Protection: \$43,580    | 36980 m <sup>2</sup>               |
| <b>N. Total</b>                      | <b>\$45,585,413</b>                |
| <b>Unit cost</b>                     | <b>\$1,232.70 \$/m<sup>2</sup></b> |

Note: The regional costs used \$1200/m2, upon further review of Legacy contract price, \$1232.70/m2 was used for these alignment specific estimates.

#### Structure Typicalals



| Alt         | Cross Streets | typical length (m) | width (m) | Additional structure area (m <sup>2</sup> ) for       |   |   | Cost not Including Termini Interchanges | Cost Termini Interchanges | Total Cost          |
|-------------|---------------|--------------------|-----------|---|---|---|---|---------------------------|---------------------|
|             |               |                    |           | Area (m <sup>2</sup> ) Excluding Termini Interchanges | skewed crossings, interior interchanges, and tracks (A) | Cost not Including Termini Interchanges |   |                           |                     |
| DRG 1       | 12            | 55                 | 33        | 21780   | 10890   | \$40,272,457                            | \$55,107,753                            |                           | <b>\$95,380,210</b> |
|             | Link 2        | 4                  | 55        | 7260  | 660   | \$9,763,020                             |   |                           |                     |
|             | Link 3        | 5                  | 55        | 9075  | 10230   | \$23,797,361                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| DRG 2       | 12            | 55                 | 33        | 21780   | 10890   | \$40,272,457                            | \$55,107,753                            |                           | <b>\$95,380,210</b> |
|             | Link 2        | 4                  | 55        | 7260  | 660   | \$9,763,020                             |   |                           |                     |
|             | Link 3        | 5                  | 55        | 9075  | 10230   | \$23,797,361                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| DRG 3       | 10            | 55                 | 33        | 18150   | 11220   | \$36,204,532                            | \$55,107,753                            |                           | <b>\$91,312,285</b> |
|             | Link 2        | 0                  | 55        | 0   | 0   | \$0                                     |   |                           |                     |
|             | Link 3        | 7                  | 55        | 12705   | 11220   | \$29,492,456                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| DRG 4       | 10            | 55                 | 33        | 18150   | 4290  | \$27,661,889                            | \$55,107,753                            |                           | <b>\$82,769,642</b> |
|             | Link 2        | 0                  | 55        | 0   | 0   | \$0                                     |   |                           |                     |
|             | Link 3        | 7                  | 55        | 12705   | 4290  | \$20,949,813                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| DRG 5 (B)   | 10            | 55                 | 33        | 18150   | 3135  | \$26,238,116                            | \$55,107,753                            |                           | <b>\$81,345,869</b> |
|             | Link 2        | 0                  | 55        | 0   | 0   | \$0                                     |   |                           |                     |
|             | Link 3        | 7                  | 55        | 12705   | 3135  | \$19,526,040                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| ALT E (B,C) | 4             | 55                 | 33        | 7260  | 2273  | \$11,751,372                            | \$55,107,753                            |                           | <b>\$66,859,125</b> |
|             | Link 2        | 0                  | 55        | 0   | 0   | \$0                                     |   |                           |                     |
|             | Link 3        | 1                  | 55        | 1815  | 2273  | \$5,039,296                             |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |

**Notes:**

Note A, Additional lengths for skew crossings, railroad tracks, and Mill Creek crossing

DRG 1 DRG1 at Redwood Road and 400 West (+10m each) , 500 S. over DRG tracks (55m), DRG1 at Mill Creek (55m)

DRG1 over DRG tracks near golf course (200m)

DRG 2 DRG2 at Redwood Road and 400 West (+10m each) , 500 S. over DRG tracks (55m), DRG2 at Mill Creek (55m)

DRG2 over DRG tracks near golf course (200m)

DRG 3 DRG3 at Redwood Road, 1100 West, and 500 South (+10m each), 500 S. over DRG (55m),

DRG3 at Mill Creek (55m), DRG3 over DRG tracks near golf course (200m)

DRG 4 DRG 4 at Redwood (+10m), DRG 4 at 500 S. Interchange (+10m), DRG 4 over DRG tracks (55 m), DRG4 at Mill Creek

DRG 5 DRG5 at Redwood Road, 500 S, 1100 West, and 400 N. (+10 m each) DRG5 at Mill Creek (55m)

ALT E 2273 m2 area for Mill Creek crossing (see attached spreadsheet).

Note B, The D&amp;RG becomes inactive at 400 North, therefore DRG5 and GSL do not require a structure to cross the tracks.

Note C, The cross streets for Alt E go over Legacy

**Mill Creek**

Area from plan sheet

ALT E

SB (Includes Mainline and

L (m)= 48

W (m)= 26

Area (m2)= 1248

NB (Includes mainline and trail)

L (m)= 41

W (m)= 25

Area (m2)= 1025

Total area (m2) 2273

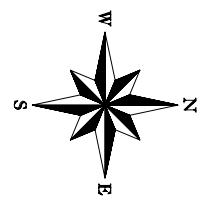
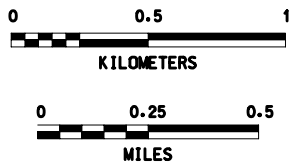






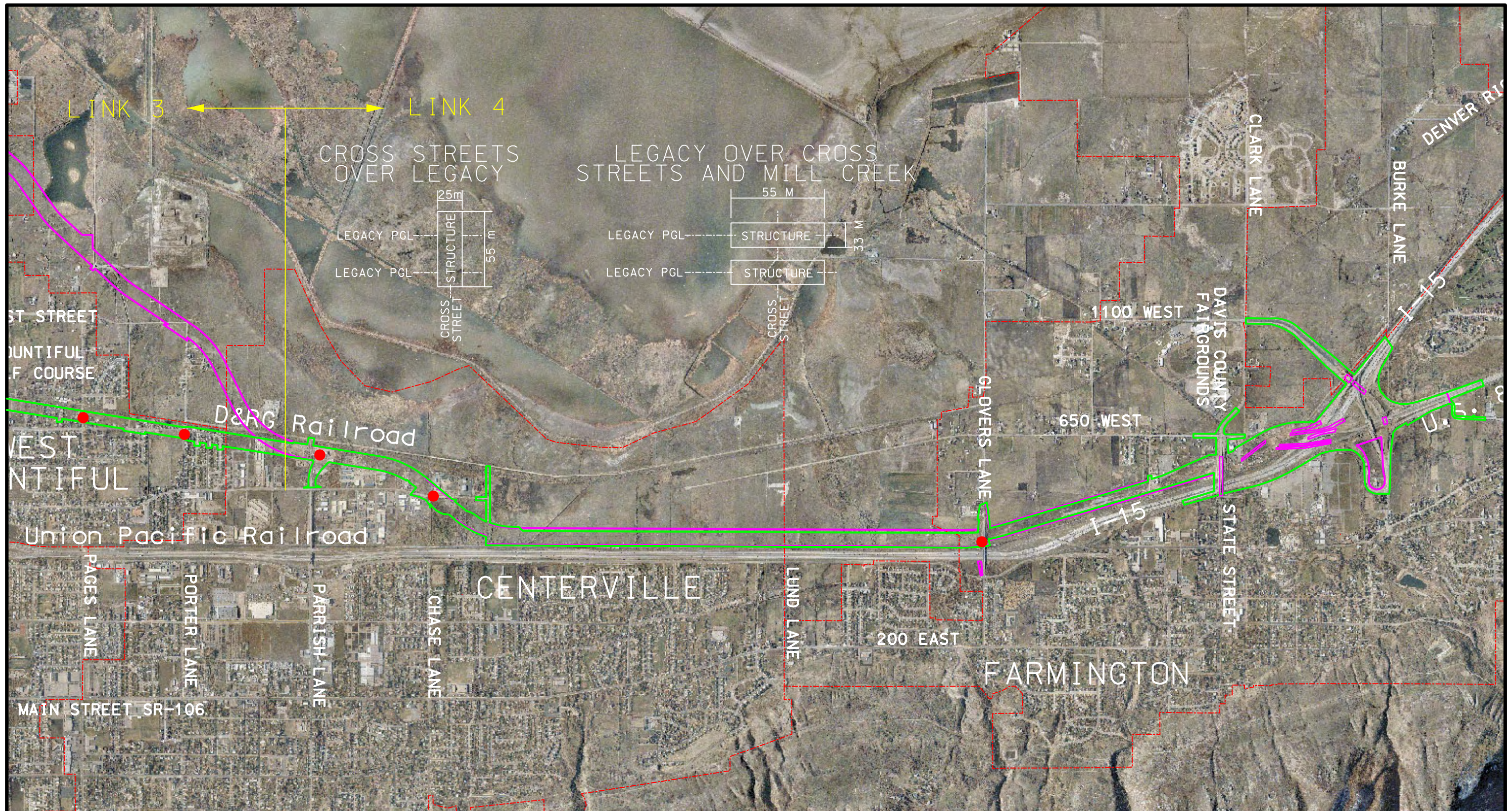
**LEGEND**

- |               |  |
|---------------|--|
| D&RG 1        | MUNICIPAL BOUNDARY                                 |
| D&RG 2        | INTERCHANGE STRUCTURES                             |
| D&RG 3        | CROSSING STREET STRUCTURE LOCATIONS                |
| D&RG 4        | RAIL CROSSING AND SKEWED CROSSING STREET STRUCTURE |
| D&RG 5        | MILL CREEK CROSSING                                |
| ALTERNATIVE E |  |



**ATTACHMENT 9  
FIGURE 1  
STRUCTURES**



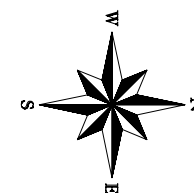


#### LEGEND

- |               |  |
|---------------|--|
| D&RG 1        | MUNICIPAL BOUNDARY                                 |
| D&RG 2        | INTERCHANGE STRUCTURES                             |
| D&RG 3        | CROSSING STREET STRUCTURE LOCATIONS                |
| D&RG 4        | RAIL CROSSING AND SKEWED CROSSING STREET STRUCTURE |
| D&RG 5        | MILL CREEK CROSSING                                |
| ALTERNATIVE E |  |

0 0.5 1  
KILOMETERS

0 0.25 0.5  
MILES



#### ATTACHMENT 9 FIGURE 2 STRUCTURES

Legacy Parkway Supplemental EIS  
JUNE 2004



|         |                    |          |     |      |          |
|---------|--------------------|----------|-----|------|----------|
| Project | Legacy SEIS        | Computed | BRS | Date | 5/3/2004 |
| Subject | DRG Cost Estimates | Checked  |     | Date |          |
| Task    | Striping Estimates | Sheet    |     | Of   |          |
| Job No. |                    | No.      |     |      |          |

Striping cost is \$1.00/m based on average 2003 UDOT bid prices, 027650060.

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

North

Interchange \$412,752

South

Interchange \$155,280

**Subtotal= \$568,032**

Total length required for restriping cross streets 200 m  
Assume cross streets are 4 lanes (2 each direction) 3 solid lines 2 skip lines = 3.5

Interchanges at 500 South and Parrish Lane

8 Ramps 500 m long = 4000 m

2 lanes = 2 solid 1 skip = 2.25

Ramps 9000 m

500 South = 9200 m

Crossing Street 200 m

Parrish Lane = 9200 m

Interchange 9200 m

**Subtotal = 18400 m**

#### Mainline

|       |        | Length,<br>Excluding N/S<br>Interchanges<br>(miles) | (m)   | Striping 4 solid<br>lines 2 skip<br>lines | Total (m) |
|-------|--------|---|-------|---|-----------|
| Alt   |        |   |       |   |           |
| DRG 1 | Link 1 | 0   | 0     | 4.5                                       | 0         |
|       | Link 2 | 2.5   | 4,325 | 4.5                                       | 19,463    |
|       | Link 3 | 3.6   | 5,625 | 4.5                                       | 25,313    |
|       | Link 4 | 4.1   | 6,510 | 4.5                                       | 29,295    |
|       | Link 5 | 0   | 0     | 4.5                                       | 0         |
| DRG 2 | Link 1 | 0   | 0     | 4.5                                       | 0         |
|       | Link 2 | 2.5   | 4,325 | 4.5                                       | 19,463    |
|       | Link 3 | 3.6   | 5,625 | 4.5                                       | 25,313    |
|       | Link 4 | 4.1   | 6,510 | 4.5                                       | 29,295    |
|       | Link 5 | 0   | 0     | 4.5                                       | 0         |
| DRG 3 | Link 1 | 0   | 0     | 4.5                                       | 0         |
|       | Link 2 | 1.9   | 3,320 | 4.5                                       | 14,940    |
|       | Link 3 | 4.5   | 7,120 | 4.5                                       | 32,040    |
|       | Link 4 | 4.1   | 6,510 | 4.5                                       | 29,295    |
|       | Link 5 | 0   | 0     | 4.5                                       | 0         |
| DRG 4 | Link 1 | 0   | 0     | 4.5                                       | 0         |
|       | Link 2 | 1.9   | 3,320 | 4.5                                       | 14,940    |
|       | Link 3 | 4.4   | 6,910 | 4.5                                       | 31,095    |
|       | Link 4 | 4.1   | 6,510 | 4.5                                       | 29,295    |
|       | Link 5 | 0   | 0     | 4.5                                       | 0         |
| DRG 5 | Link 1 | 0   | 0     | 4.5                                       | 0         |
|       | Link 2 | 1.9   | 3,320 | 4.5                                       | 14,940    |
|       | Link 3 | 4.3   | 6,705 | 4.5                                       | 30,173    |
|       | Link 4 | 4.1   | 6,510 | 4.5                                       | 29,295    |
|       | Link 5 | 0   | 0     | 4.5                                       | 0         |
| ALT E | Link 1 | 0   | 0     | 4.5                                       | 0         |
|       | Link 2 | 1.9   | 3,320 | 4.5                                       | 14,940    |
|       | Link 3 | 4.4   | 6,860 | 4.5                                       | 30,870    |
|       | Link 4 | 4.1   | 6,510 | 4.5                                       | 29,295    |
|       | Link 5 | 0   | 0     | 4.5                                       | 0         |

**Cross Streets**

| Alt   |        | Cross Streets<br>excluding all<br>interchanges | Striping lines | Total (m) |
|-------|--------|--|----------------|-----------|
| DRG 1 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 4  | 3.5            | 2,800     |
|       | Link 3 | 4  | 3.5            | 2,800     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| DRG 2 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 4  | 3.5            | 2,800     |
|       | Link 3 | 4  | 3.5            | 2,800     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| DRG 3 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 0  | 3.5            | 0         |
|       | Link 3 | 6  | 3.5            | 4,200     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| DRG 4 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 0  | 3.5            | 0         |
|       | Link 3 | 6  | 3.5            | 4,200     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| DRG 5 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 0  | 3.5            | 0         |
|       | Link 3 | 6  | 3.5            | 4,200     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| ALT E | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 0  | 3.5            | 0         |
|       | Link 3 | 0  | 3.5            | 0         |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |

**Internal Interchanges (500 South & Parrish Lane)**

| All Alternatives | Total (m) |
|------------------|-----------|
| Link 3           | 9,200     |
| Link 4           | 9,200     |

**Totals**

|       |        |           |            | Cost Not<br>Including<br>North/South<br>Interchanges | Cost of<br>Termini<br>Interchanges | Total Cost       |
|-------|--------|-----------|------------|--|------------------------------------|------------------|
| Alt   |        | Total (m) | Cost per m |  |                                    |                  |
| DRG 1 | Link 1 | 0         | \$1.00     | \$0  | \$155,280                          | <b>\$155,280</b> |
|       | Link 2 | 22,263    | \$1.00     | \$22,263   | \$0                                | <b>\$22,263</b>  |
|       | Link 3 | 37,313    | \$1.00     | \$37,313   | \$0                                | <b>\$37,313</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895   | \$0                                | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0  | \$412,752                          | <b>\$412,752</b> |
| DRG 2 | Link 1 | 0         | \$1.00     | \$0  | \$155,280                          | <b>\$155,280</b> |
|       | Link 2 | 22,263    | \$1.00     | \$22,263   | \$0                                | <b>\$22,263</b>  |
|       | Link 3 | 37,313    | \$1.00     | \$37,313   | \$0                                | <b>\$37,313</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895   | \$0                                | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0  | \$412,752                          | <b>\$412,752</b> |
| DRG 3 | Link 1 | 0         | \$1.00     | \$0  | \$155,280                          | <b>\$155,280</b> |
|       | Link 2 | 14,940    | \$1.00     | \$14,940   | \$0                                | <b>\$14,940</b>  |
|       | Link 3 | 45,440    | \$1.00     | \$45,440   | \$0                                | <b>\$45,440</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895   | \$0                                | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0  | \$412,752                          | <b>\$412,752</b> |
| DRG 4 | Link 1 | 0         | \$1.00     | \$0  | \$155,280                          | <b>\$155,280</b> |
|       | Link 2 | 14,940    | \$1.00     | \$14,940   | \$0                                | <b>\$14,940</b>  |
|       | Link 3 | 44,495    | \$1.00     | \$44,495   | \$0                                | <b>\$44,495</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895   | \$0                                | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0  | \$412,752                          | <b>\$412,752</b> |
| DRG 5 | Link 1 | 0         | \$1.00     | \$0  | \$155,280                          | <b>\$155,280</b> |
|       | Link 2 | 14,940    | \$1.00     | \$14,940   | \$0                                | <b>\$14,940</b>  |
|       | Link 3 | 43,573    | \$1.00     | \$43,573   | \$0                                | <b>\$43,573</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895   | \$0                                | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0  | \$412,752                          | <b>\$412,752</b> |
| ALT E | Link 1 | 0         | \$1.00     | \$0  | \$155,280                          | <b>\$155,280</b> |
|       | Link 2 | 14,940    | \$1.00     | \$14,940   | \$0                                | <b>\$14,940</b>  |
|       | Link 3 | 40,070    | \$1.00     | \$40,070   | \$0                                | <b>\$40,070</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895   | \$0                                | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0  | \$412,752                          | <b>\$412,752</b> |

|         |                    |          |     |      |          |
|---------|--------------------|----------|-----|------|----------|
| Project | Legacy SEIS        | Computed | BRS | Date | 5/3/2004 |
| Subject | DRG Cost Estimates | Checked  |     | Date |          |
| Task    | Fence Estimates    | Sheet    |     | Of   |          |
| Job No. |                    | No.      |     |      |          |

Fencing includes both sides of the ROW (6' chain link) and between trail and roadway (4' chain link). Split rail fencing is provided the entire length of the trail for separation of equestrians and multi-users.

See Microstation file fence.dgn for fence locations and lengths

6' Fence cost from 2003 UDOT average bid items is \$29/m, 028210018 Type II.

\* FAK Contract price, use \$18/m

\*\*No UDOT bid items, see attached documentation from American Fence and Supply Co. (\$2.79-\$3.89/ft, not including concrete) and Vinyl Fence and Deck Wholesaler (\$2.57/ft). Use 3.50/ft or \$11.50/m.

American Fence and Supply Co, Inc. [www.afence.com/SplitrailCAT/split\\_rail\\_pricing.htm](http://www.afence.com/SplitrailCAT/split_rail_pricing.htm)

Vinyl Fence and Vinyl Deck Wholesaler [www.vinylfenceanddeck.com](http://www.vinylfenceanddeck.com)

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

For estimates without the trail cost includes only 6' ROW fence. The 4' fence separates the roadway from the trail and the split rail fence separates the two trails.

#### Contract Price for Termini Interchanges

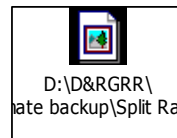
North

Interchange \$606,851

South

Interchange \$777,615

**Subtotal= \$1,384,466**



#### 6' ROW Fence

|       |        | Length | Unit Cost | Mainline Cost |
|-------|--------|--------|-----------|---------------|
| DRG1  | Link 1 | 0      | \$29      | \$0           |
|       | Link 2 | 9,165  | \$29      | \$265,773     |
|       | Link 3 | 13,154 | \$29      | \$381,466     |
|       | Link 4 | 15,060 | \$29      | \$436,740     |
|       | Link 5 | 0      | \$29      | \$0           |
| DRG2  | Link 1 | 0      | \$29      | \$0           |
|       | Link 2 | 8,595  | \$29      | \$249,264     |
|       | Link 3 | 13,154 | \$29      | \$381,466     |
|       | Link 4 | 15,060 | \$29      | \$436,740     |
|       | Link 5 | 0      | \$29      | \$0           |
| DRG3  | Link 1 | 0      | \$29      | \$0           |
|       | Link 2 | 6,647  | \$29      | \$192,763     |
|       | Link 3 | 16,194 | \$29      | \$469,626     |
|       | Link 4 | 15,060 | \$29      | \$436,740     |
|       | Link 5 | 0      | \$29      | \$0           |
| DRG4  | Link 1 | 0      | \$29      | \$0           |
|       | Link 2 | 6,647  | \$29      | \$192,763     |
|       | Link 3 | 15,356 | \$29      | \$445,324     |
|       | Link 4 | 15,060 | \$29      | \$436,740     |
|       | Link 5 | 0      | \$29      | \$0           |
| DRG5  | Link 1 | 0      | \$29      | \$0           |
|       | Link 2 | 6,647  | \$29      | \$192,763     |
|       | Link 3 | 15,247 | \$29      | \$442,159     |
|       | Link 4 | 15,060 | \$29      | \$436,740     |
|       | Link 5 | 0      | \$29      | \$0           |
| ALT E | Link 1 | 0      | \$29      | \$0           |
|       | Link 2 | 6,647  | \$29      | \$192,763     |
|       | Link 3 | 14,462 | \$29      | \$419,411     |
|       | Link 4 | 15,060 | \$29      | \$436,740     |
|       | Link 5 | 0      | \$29      | \$0           |

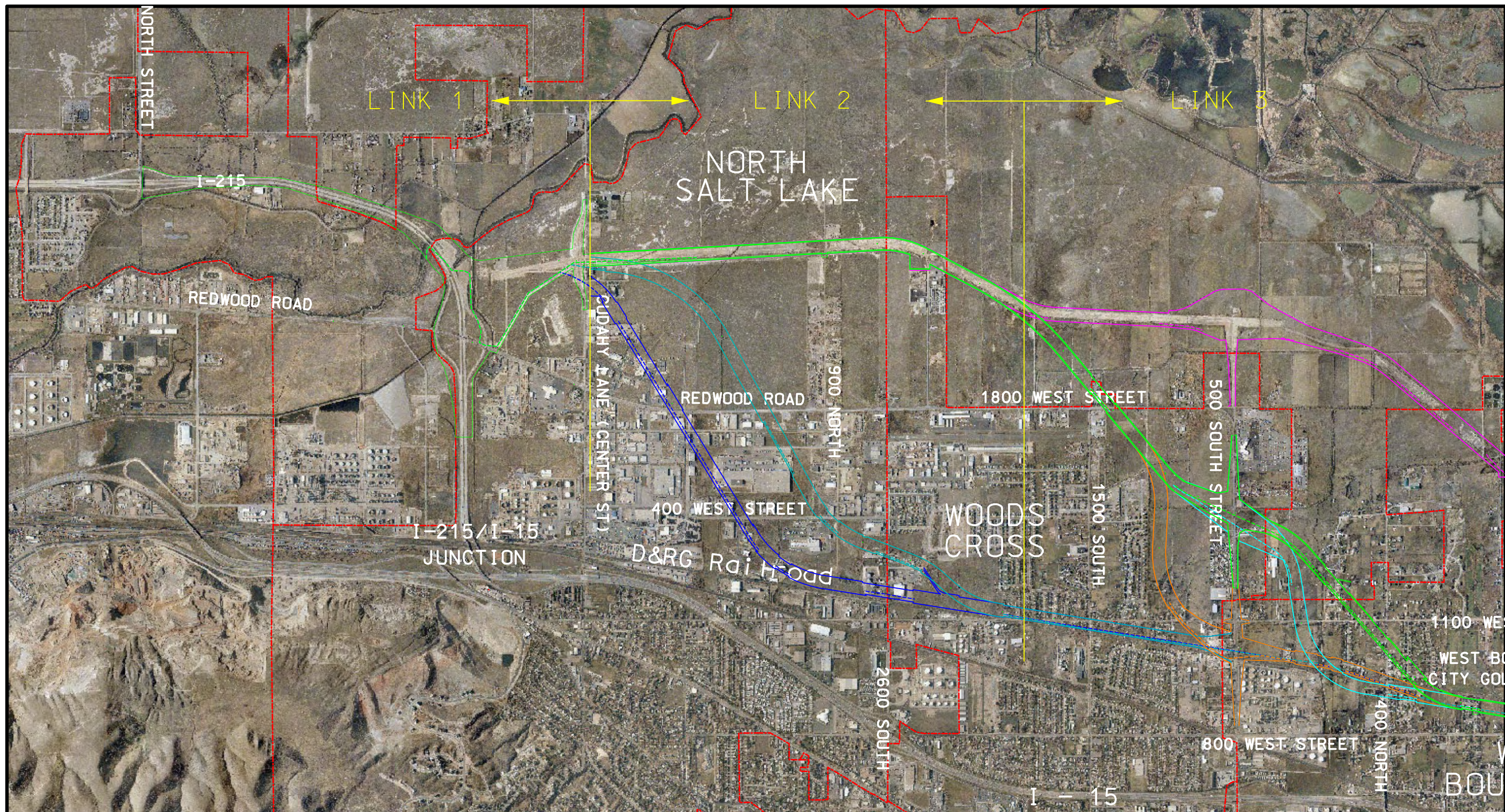
| <b>4' Chain link Fence*</b> |        |        |           |               |
|-----------------------------|--------|--------|-----------|---------------|
|                             |        | Length | Unit Cost | Mainline Cost |
| DRG1                        | Link 1 | 0      | \$18      | \$0           |
|                             | Link 2 | 4,325  | \$18      | \$77,850      |
|                             | Link 3 | 5,625  | \$18      | \$101,250     |
|                             | Link 4 | 6,510  | \$18      | \$117,180     |
|                             | Link 5 | 0      | \$18      | \$0           |
| DRG2                        | Link 1 | 0      | \$18      | \$0           |
|                             | Link 2 | 4,325  | \$18      | \$77,850      |
|                             | Link 3 | 5,625  | \$18      | \$101,250     |
|                             | Link 4 | 6,510  | \$18      | \$117,180     |
|                             | Link 5 | 0      | \$18      | \$0           |
| DRG3                        | Link 1 | 0      | \$18      | \$0           |
|                             | Link 2 | 3,320  | \$18      | \$59,760      |
|                             | Link 3 | 7,120  | \$18      | \$128,160     |
|                             | Link 4 | 6,510  | \$18      | \$117,180     |
|                             | Link 5 | 0      | \$18      | \$0           |
| DRG4                        | Link 1 | 0      | \$18      | \$0           |
|                             | Link 2 | 3,320  | \$18      | \$59,760      |
|                             | Link 3 | 6,910  | \$18      | \$124,380     |
|                             | Link 4 | 6,510  | \$18      | \$117,180     |
|                             | Link 5 | 0      | \$18      | \$0           |
| DRG5                        | Link 1 | 0      | \$18      | \$0           |
|                             | Link 2 | 3,320  | \$18      | \$59,760      |
|                             | Link 3 | 6,705  | \$18      | \$120,690     |
|                             | Link 4 | 6,510  | \$18      | \$117,180     |
|                             | Link 5 | 0      | \$18      | \$0           |
| ALT E                       | Link 1 | 0      | \$18      | \$0           |
|                             | Link 2 | 3,320  | \$18      | \$59,760      |
|                             | Link 3 | 6,860  | \$18      | \$123,480     |
|                             | Link 4 | 6,510  | \$18      | \$117,180     |
|                             | Link 5 | 0      | \$18      | \$0           |



|       |        | <b>Split Rail Fence**</b> |           |               |
|-------|--------|---------------------------|-----------|---------------|
|       |        | Length                    | Unit Cost | Mainline Cost |
| DRG1  | Link 1 | 0                         | \$11.50   | \$0           |
|       | Link 2 | 2,721                     | \$11.50   | \$31,289      |
|       | Link 3 | 4,592                     | \$11.50   | \$52,813      |
|       | Link 4 | 1,270                     | \$11.50   | \$14,605      |
|       | Link 5 | 0                         | \$11.50   | \$0           |
| DRG2  | Link 1 | 0                         | \$11.50   | \$0           |
|       | Link 2 | 1,232                     | \$11.50   | \$14,164      |
|       | Link 3 | 4,592                     | \$11.50   | \$52,813      |
|       | Link 4 | 1,270                     | \$11.50   | \$14,605      |
|       | Link 5 | 0                         | \$11.50   | \$0           |
| DRG3  | Link 1 | 0                         | \$11.50   | \$0           |
|       | Link 2 | 768                       | \$11.50   | \$8,830       |
|       | Link 3 | 3,938                     | \$11.50   | \$45,286      |
|       | Link 4 | 1,270                     | \$11.50   | \$14,605      |
|       | Link 5 | 0                         | \$11.50   | \$0           |
| DRG4  | Link 1 | 0                         | \$11.50   | \$0           |
|       | Link 2 | 768                       | \$11.50   | \$8,830       |
|       | Link 3 | 3,525                     | \$11.50   | \$40,539      |
|       | Link 4 | 1,270                     | \$11.50   | \$14,605      |
|       | Link 5 | 0                         | \$11.50   | \$0           |
| DRG5  | Link 1 | 0                         | \$11.50   | \$0           |
|       | Link 2 | 768                       | \$11.50   | \$8,830       |
|       | Link 3 | 4,425                     | \$11.50   | \$50,889      |
|       | Link 4 | 1,270                     | \$11.50   | \$14,605      |
|       | Link 5 | 0                         | \$11.50   | \$0           |
| ALT E | Link 1 | 0                         | \$11.50   | \$0           |
|       | Link 2 | 768                       | \$11.50   | \$8,830       |
|       | Link 3 | 3,854                     | \$11.50   | \$44,324      |
|       | Link 4 | 1,270                     | \$11.50   | \$14,605      |
|       | Link 5 | 0                         | \$11.50   | \$0           |

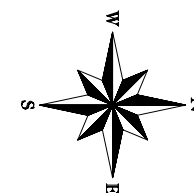
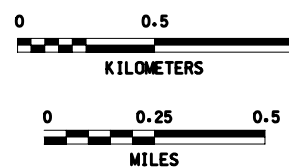
| <b>Total Fence Costs</b> |        |              |              |                   |              |                   |
|--------------------------|--------|--------------|--------------|-------------------|--------------|-------------------|
|                          |        | Cost of      | Cost Not     | <b>Total Cost</b> | Cost Not     | <b>Total Cost</b> |
|                          |        | North/South  | Including    |                   | Including    |                   |
| Alt                      |        | Interchanges | North/South  | With Trail        | Interchanges | Without Trail     |
|                          |        |              | Interchanges |                   |              |                   |
| DRG1                     | Link 1 | \$777,615    | \$0          | <b>\$777,615</b>  | \$0          | <b>\$777,615</b>  |
|                          | Link 2 | \$0          | \$374,912    | <b>\$374,912</b>  | \$265,773    | <b>\$265,773</b>  |
|                          | Link 3 | \$0          | \$535,529    | <b>\$535,529</b>  | \$381,466    | <b>\$381,466</b>  |
|                          | Link 4 | \$0          | \$568,525    | <b>\$568,525</b>  | \$436,740    | <b>\$436,740</b>  |
|                          | Link 5 | \$606,851    | \$0          | <b>\$606,851</b>  | \$0          | <b>\$606,851</b>  |
| DRG2                     | Link 1 | \$777,615    | \$0          | <b>\$777,615</b>  | \$0          | <b>\$777,615</b>  |
|                          | Link 2 | \$0          | \$341,277    | <b>\$341,277</b>  | \$249,264    | <b>\$249,264</b>  |
|                          | Link 3 | \$0          | \$535,529    | <b>\$535,529</b>  | \$381,466    | <b>\$381,466</b>  |
|                          | Link 4 | \$0          | \$568,525    | <b>\$568,525</b>  | \$436,740    | <b>\$436,740</b>  |
|                          | Link 5 | \$606,851    | \$0          | <b>\$606,851</b>  | \$0          | <b>\$606,851</b>  |
| DRG3                     | Link 1 | \$777,615    | \$0          | <b>\$777,615</b>  | \$0          | <b>\$777,615</b>  |
|                          | Link 2 | \$0          | \$261,353    | <b>\$261,353</b>  | \$192,763    | <b>\$192,763</b>  |
|                          | Link 3 | \$0          | \$643,072    | <b>\$643,072</b>  | \$469,626    | <b>\$469,626</b>  |
|                          | Link 4 | \$0          | \$568,525    | <b>\$568,525</b>  | \$436,740    | <b>\$436,740</b>  |
|                          | Link 5 | \$606,851    | \$0          | <b>\$606,851</b>  | \$0          | <b>\$606,851</b>  |
| DRG4                     | Link 1 | \$777,615    | \$0          | <b>\$777,615</b>  | \$0          | <b>\$777,615</b>  |
|                          | Link 2 | \$0          | \$261,353    | <b>\$261,353</b>  | \$192,763    | <b>\$192,763</b>  |
|                          | Link 3 | \$0          | \$610,243    | <b>\$610,243</b>  | \$445,324    | <b>\$445,324</b>  |
|                          | Link 4 | \$0          | \$568,525    | <b>\$568,525</b>  | \$436,740    | <b>\$436,740</b>  |
|                          | Link 5 | \$606,851    | \$0          | <b>\$606,851</b>  | \$0          | <b>\$606,851</b>  |
| DRG5                     | Link 1 | \$777,615    | \$0          | <b>\$777,615</b>  | \$0          | <b>\$777,615</b>  |
|                          | Link 2 | \$0          | \$261,353    | <b>\$261,353</b>  | \$192,763    | <b>\$192,763</b>  |
|                          | Link 3 | \$0          | \$613,737    | <b>\$613,737</b>  | \$442,159    | <b>\$442,159</b>  |
|                          | Link 4 | \$0          | \$568,525    | <b>\$568,525</b>  | \$436,740    | <b>\$436,740</b>  |
|                          | Link 5 | \$606,851    | \$0          | <b>\$606,851</b>  | \$0          | <b>\$606,851</b>  |
| ALT E                    | Link 1 | \$777,615    | \$0          | <b>\$777,615</b>  | \$0          | <b>\$777,615</b>  |
|                          | Link 2 | \$0          | \$261,353    | <b>\$261,353</b>  | \$192,763    | <b>\$192,763</b>  |
|                          | Link 3 | \$0          | \$587,215    | <b>\$587,215</b>  | \$419,411    | <b>\$419,411</b>  |
|                          | Link 4 | \$0          | \$568,525    | <b>\$568,525</b>  | \$436,740    | <b>\$436,740</b>  |
|                          | Link 5 | \$606,851    | \$0          | <b>\$606,851</b>  | \$0          | <b>\$606,851</b>  |





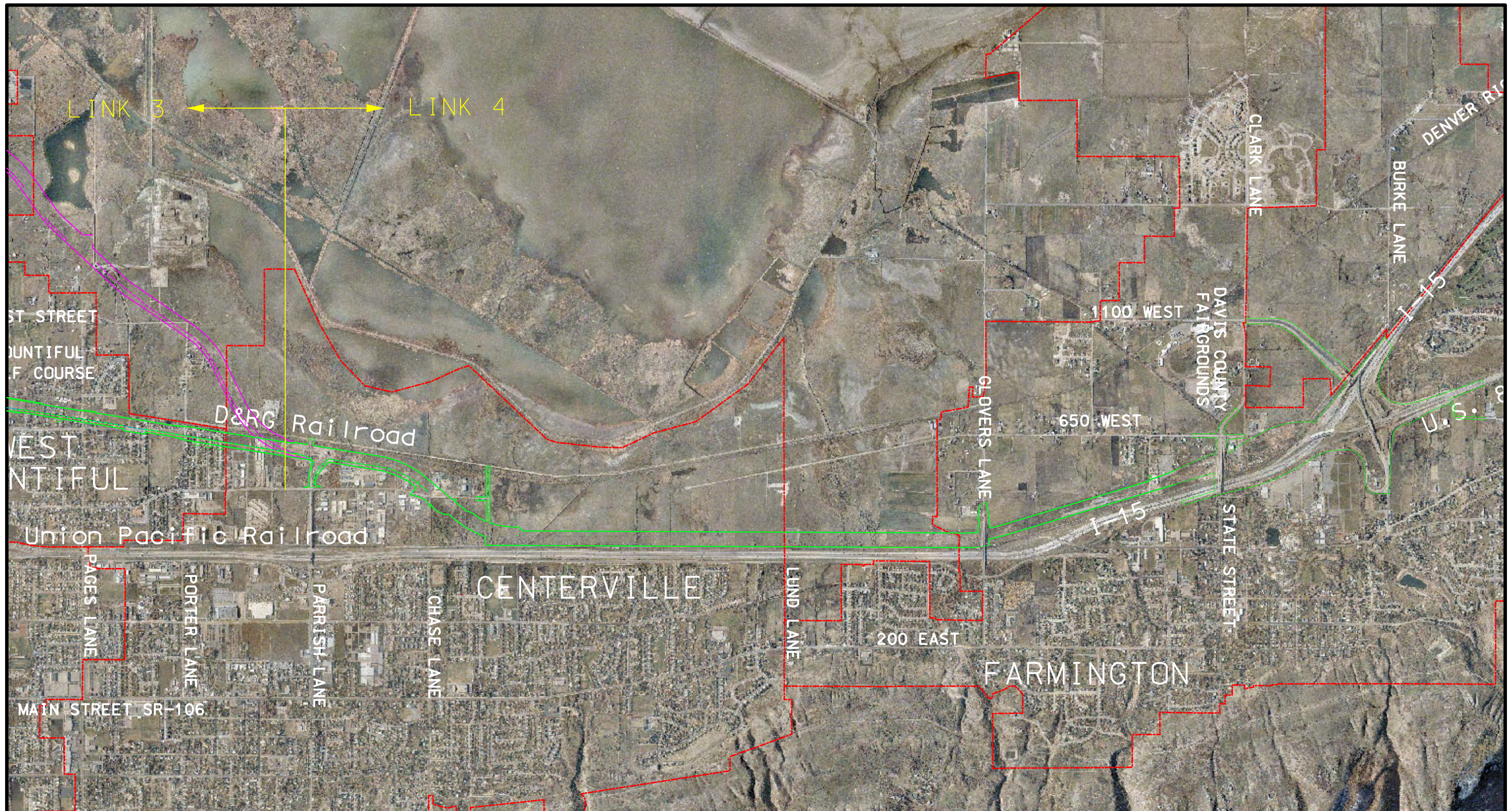
**LEGEND**

- |   |   |
|---|---|
| <span style="color: blue;">↘</span> D&RG 1      | <span style="color: magenta;">↘</span> ALTERNATIVE E  |
| <span style="color: cyan;">↘</span> D&RG 2      | <span style="color: red;">↘</span> MUNICIPAL BOUNDARY |
| <span style="color: orange;">↘</span> D&RG 3    | --- 4' TRAIL FENCE                                    |
| <span style="color: lightblue;">↘</span> D&RG 4 | — 6' ROW FENCE  |
| <span style="color: green;">↘</span> D&RG 5     |   |



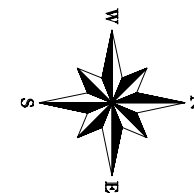
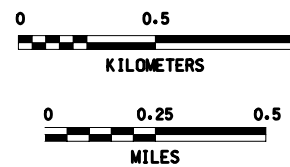
**ATTACHMENT 11  
FIGURE 1  
FENCE**





**LEGEND**

- |  |        |  |                    |
|--|--------|--|--------------------|
|  | D&RG 1 |  | ALTERNATIVE E      |
|  | D&RG 2 |  | MUNICIPAL BOUNDARY |
|  | D&RG 3 |  | 4' TRAIL FENCE     |
|  | D&RG 4 |  | 6' ROW FENCE       |
|  | D&RG 5 |  |                    |



**ATTACHMENT 11  
FIGURE 2  
FENCE**



|                |                         |                 |    |             |           |
|----------------|-------------------------|-----------------|----|-------------|-----------|
| <b>Project</b> | Legacy SEIS             | <b>Computed</b> | TW | <b>Date</b> | 5/17/2004 |
| <b>Subject</b> | DRG Cost Estimates      | <b>Checked</b>  |    | <b>Date</b> |           |
| <b>Task</b>    | Drainage Considerations | <b>Sheet</b>    |    | <b>Of</b>   |           |
| <b>Job No.</b> |                         | <b>No.</b>      |    |             |           |

The drainage scheme for the Preferred Alternative was to allow sheet flow of runoff into the Legacy Nature Preserve, to the extent practical.

Assuming the same stormwater controls in the northern and southern interchanges for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

|                   |                                      |
|-------------------|--------------------------------------|
| North Interchange | \$2,158,256                          |
| South Interchange | \$324,696                            |
|                   | <b>\$2,482,952 interchange Total</b> |

#### Box Culverts for Major Stream Crossings

Box Culverts will be placed at the following Stream crossings: North Canyon, Oil Drain, Drainage Canal, Barton Creek, Deuel/Stone Creek, Parrish Creek, Barnard Creek, Ricks Creek, Davis Creek, Steed Creek, Farmington Creek, Shepard Creek.

Cost (6'x6' prefabricated) is based on UDOT average bid prices 2003.

Box culverts run from ROW line to ROW line.

Length = 80 m

Unit cost is \$ 4,000.00 per m

|                  | Number | Cost            |   |
|------------------|--------|-----------------|---|
| All Alts. Link 1 | 2      | \$ 640,000.00   | Oil Drain, Drainage Canal   |
| Link 2           | 1      | \$ 320,000.00   | North Canyon  |
| Link 3           | 2      | \$ 640,000.00   | Barton Creek, Deuel/Stone Creek                                     |
| Link 4           | 5      | \$ 1,600,000.00 | Parrish Creek, Barnard Canal, Ricks Creek, Steed Creek, Davis Creek |
| Link 5           | 2      | \$ 640,000.00   | Farmington Creek, Shepard Creek                                     |

#### 24" RCP and Catch Basins for median drainage and minor drainage crossings

Pipe runs along the entire length (excluding termini interchanges) and perpendicular every 100 m.

24" RCP cost of \$110/m is based on average UDOT bid item, 026100428.

3 Catch Basins will be placed at each perpendicular crossing, east side, median and west side of the ROW for D&RG alts. Due to sheet flow into the Nature Preserve only 2 catch basins will be placed for Alt E (median and east side of ROW).

Catch basins \$1,800 each

Unit cost= \$110 /m

| Alt.  |        | Length<br>(excluding<br>termini | Perpendicular<br>distance (m)= | Total<br>perpendicular<br>crossings= | Length of<br>perpendicular<br>crossings (m) | Total length of<br>pipe (m)= | # of Catch<br>Basins | Cost Catch<br>Basins | Cost        |
|-------|--------|---------------------------------|--------------------------------|--------------------------------------|---|------------------------------|----------------------|----------------------|-------------|
| DRG 1 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 4,325                           | 80                             | 43                                   | 3,460                                       | 7,785                        | 130                  | \$233,550            | \$1,089,900 |
|       | Link 3 | 5,625                           | 80                             | 56                                   | 4,500                                       | 10,125                       | 169                  | \$303,750            | \$1,417,500 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| DRG 2 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 4,325                           | 80                             | 43                                   | 3,460                                       | 7,785                        | 130                  | \$233,550            | \$1,089,900 |
|       | Link 3 | 5,625                           | 80                             | 56                                   | 4,500                                       | 10,125                       | 169                  | \$303,750            | \$1,417,500 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| DRG 3 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 3,320                           | 80                             | 33                                   | 2,656                                       | 5,976                        | 100                  | \$179,280            | \$836,640   |
|       | Link 3 | 7,120                           | 80                             | 71                                   | 5,696                                       | 12,816                       | 214                  | \$384,480            | \$1,794,240 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| DRG 4 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 3,320                           | 80                             | 33                                   | 2,656                                       | 5,976                        | 100                  | \$179,280            | \$836,640   |
|       | Link 3 | 6,910                           | 80                             | 69                                   | 5,528                                       | 12,438                       | 207                  | \$373,140            | \$1,741,320 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| DRG 5 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 3,320                           | 80                             | 33                                   | 2,656                                       | 5,976                        | 100                  | \$179,280            | \$836,640   |
|       | Link 3 | 6,705                           | 80                             | 67                                   | 5,364                                       | 12,069                       | 201                  | \$362,070            | \$1,689,660 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| ALT E | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 3,320                           | 80                             | 33                                   | 2,656                                       | 5,976                        | 66                   | \$119,520            | \$776,880   |
|       | Link 3 | 6,860                           | 80                             | 69                                   | 5,488                                       | 12,348                       | 137                  | \$246,960            | \$1,605,240 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |

**36" RCP for minor drainage crossings**

Pipe runs perpendicular every 500 m.

36" RCP cost of \$160/m is based on average UDOT bid item 026100432.

Unit cost= \$160/m

| Alt.  |        | Length | Perpendicular | Total | Length of | Cost      |
|-------|--------|--------|---------------|-------|-----------|-----------|
| DRG 1 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 4,325  | 80            | 9     | 692       | \$110,720 |
|       | Link 3 | 5,625  | 80            | 11    | 900       | \$144,000 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| DRG 2 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 4,325  | 80            | 9     | 692       | \$110,720 |
|       | Link 3 | 5,625  | 80            | 11    | 900       | \$144,000 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| DRG 3 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 3,320  | 80            | 7     | 531       | \$84,992  |
|       | Link 3 | 7,120  | 80            | 14    | 1,139     | \$182,272 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| DRG 4 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 3,320  | 80            | 7     | 531       | \$84,992  |
|       | Link 3 | 6,910  | 80            | 14    | 1,106     | \$176,896 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| DRG 5 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 3,320  | 80            | 7     | 531       | \$84,992  |
|       | Link 3 | 6,705  | 80            | 13    | 1,073     | \$171,648 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| ALT E | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 3,320  | 80            | 7     | 531       | \$84,992  |
|       | Link 3 | 6,860  | 80            | 14    | 1,098     | \$175,616 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |



**Special Drainage due to highly developed areas additional Piping, 36" RCP**

Additional piping (36" RCP, \$160/m, UDOT Bid Item 026100432) is assumed to be required near developed areas.

Because more developed areas exists around the DRG alignments, sheet flow is not feasible in many areas. Additional catch basins and piping, ditching, and detention may be required to control stormwater runoff.

See Figures 1 and 2 for areas needing special drainage considerations and potential detention basin locations. Please note no additional wetland impacts were assumed to be associated with detention basins.

**Unit Costs**

|              |         |      |                  |
|--------------|---------|------|------------------|
| 36" RCP      | \$160   | \$/m |                  |
| Catch basins | \$1,800 | each | at 100 m spacing |

|       |        | Length<br>needed | Length+10%<br>(rounded) | Pipe Cost   | Catch Basins | Total       |
|-------|--------|------------------|-------------------------|-------------|--------------|-------------|
| DRG 1 | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 2274             | 2500                    | \$400,000   | \$45,000     | \$445,000   |
|       | Link 3 | 6692             | 7400                    | \$1,184,000 | \$133,200    | \$1,317,200 |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |
| DRG 2 | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 1451             | 1600                    | \$256,000   | \$28,800     | \$284,800   |
|       | Link 3 | 6692             | 7400                    | \$1,184,000 | \$133,200    | \$1,317,200 |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |
| DRG 3 | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 3 | 6380             | 7000                    | \$1,120,000 | \$126,000    | \$1,246,000 |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |
| DRG 4 | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 3 | 5489             | 6000                    | \$960,000   | \$108,000    | \$1,068,000 |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |
| DRG 5 | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 3 | 6256             | 6900                    | \$1,104,000 | \$124,200    | \$1,228,200 |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |
| ALT E | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 3 | 351              | 400                     | \$64,000    | \$7,200      | \$71,200    |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |

**Detention Basins**

Detention basins would be needed in developed area to avoid overloading existing storm drain systems and flooding these

| DRG 1  |                        |                                  | DRG 2  |                        |                                  | DRG 3  |                        |                                  |
|--------|------------------------|----------------------------------|--------|------------------------|----------------------------------|--------|------------------------|----------------------------------|
| Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) |
| Link 2 | 1.45                   | 5868                             | Link 2 | 0.31                   | 1255                             | Link 3 | 0.76                   | 3076                             |
| Link 3 | 0.95                   | 3845                             | Link 2 | 0.62                   | 2509                             | Link 3 | 1.20                   | 4856                             |
| Link 3 | 1.20                   | 4856                             | Link 3 | 0.95                   | 3845                             | Link 3 | 2.94                   | 11898                            |
| Link 3 | 2.94                   | 11898                            | Link 3 | 1.20                   | 4856                             |        |                        |                                  |
|        |                        |                                  | Link 3 | 2.94                   | 11898                            |        |                        |                                  |

| DRG 4  |                        |                                  | DRG 5  |                        |                                  | ALT E   |                        |                                  |
|--------|------------------------|----------------------------------|--------|------------------------|----------------------------------|---------|------------------------|----------------------------------|
| Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Links   | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) |
| Link 3 | 0.86                   | 3480                             | Link 3 | 1.88                   | 7608                             | Link 3* | 1.05                   | 4249                             |
| Link 3 | 3.28                   | 13274                            | Link 3 | 2.94                   | 11898                            |         |                        |                                  |

\*For continuity with summary sheets, the cost for the Alt E detention basin will be placed in Link 3.

**Detention Basins Costs**

|                           |                  |                   |                           |  |
|---------------------------|------------------|-------------------|---------------------------|--|
| 1                         | acres            |                   |                           |  |
| Area                      | 43560            | ft <sup>2</sup>   |                           |  |
| 3 feet deep               | 130680           | ft <sup>3</sup>   |                           |  |
|                           | 4840             | CY/acre           |                           |  |
| <b>Item</b>               | <b>Unit Cost</b> | <b>Unit</b>       | <b>Total Cost</b>         |  |
| Earthwork (excavation,    | \$3.50           | CY                | \$16,940                  |  |
| Finish grading            | \$1.00           | SY                | \$4,840                   |  |
| Liner                     | \$0.65           | SY                | \$3,146                   |  |
| Protective soil placement | \$1.00           | SY                | \$4,840                   |  |
|                           |                  | Sum               | \$29,766                  |  |
|                           |                  | Contingency (25%) | \$7,442                   |  |
|                           |                  | <b>Subtotal</b>   | <b>\$37,208 per acre</b>  |  |
| Inlet/Outlet Controls     | \$10,000         | Each              | <b>\$10,000 per basin</b> |  |

| Alt.  |        | Detention Area (Acres) | Total Detention Costs |
|-------|--------|------------------------|-----------------------|
| DRG 1 | Link 2 | 1.45                   | <b>\$63,951</b>       |
|       | Link 3 | 5.09                   | <b>\$219,391</b>      |
| DRG 2 | Link 2 | 0.93                   | <b>\$54,607</b>       |
|       | Link 3 | 5.09                   | <b>\$219,391</b>      |
| DRG 3 | Link 3 | 4.90                   | <b>\$212,320</b>      |
| DRG 4 | Link 3 | 4.14                   | <b>\$174,039</b>      |
| DRG 5 | Link 3 | 4.82                   | <b>\$199,341</b>      |
| ALT E | Link 4 | 1.05                   | <b>\$49,066</b>       |

**Total Costs**

|                      |        | Contract Price<br>for<br>North/South<br>Interchanges | Box Culverts<br>Cost | 24" RCP and<br>Catch Basins<br>Cost | 36" RCP Costs<br>(Minor<br>Drainage) | Special<br>Drainage Costs<br>(development) | Detention<br>Basins Costs | Total Costs        |
|----------------------|--------|--|----------------------|-------------------------------------|--------------------------------------|--|---------------------------|--------------------|
| <b>Alts</b><br>DRG 1 | Link 1 | \$324,696  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|                      | Link 2 | \$0  | \$320,000            | \$1,089,900                         | \$110,720                            | \$445,000                                  | \$63,951                  | <b>\$2,029,571</b> |
|                      | Link 3 | \$0  | \$640,000            | \$1,417,500                         | \$144,000                            | \$1,317,200                                | \$219,391                 | <b>\$3,738,091</b> |
|                      | Link 4 | \$0  | \$1,600,000          | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|                      | Link 5 | \$2,158,256  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| DRG 2                | Link 1 | \$324,696  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|                      | Link 2 | \$0  | \$320,000            | \$1,089,900                         | \$110,720                            | \$284,800                                  | \$54,607                  | <b>\$1,860,027</b> |
|                      | Link 3 | \$0  | \$640,000            | \$1,417,500                         | \$144,000                            | \$1,317,200                                | \$219,391                 | <b>\$3,738,091</b> |
|                      | Link 4 | \$0  | \$1,600,000          | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|                      | Link 5 | \$2,158,256  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| DRG 3                | Link 1 | \$324,696  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|                      | Link 2 | \$0  | \$320,000            | \$836,640                           | \$84,992                             | \$0  | \$0                       | <b>\$1,241,632</b> |
|                      | Link 3 | \$0  | \$640,000            | \$1,794,240                         | \$182,272                            | \$1,246,000                                | \$212,320                 | <b>\$4,074,832</b> |
|                      | Link 4 | \$0  | \$1,600,000          | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|                      | Link 5 | \$2,158,256  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| DRG 4                | Link 1 | \$324,696  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|                      | Link 2 | \$0  | \$320,000            | \$836,640                           | \$84,992                             | \$0  | \$0                       | <b>\$1,241,632</b> |
|                      | Link 3 | \$0  | \$640,000            | \$1,741,320                         | \$176,896                            | \$1,068,000                                | \$174,039                 | <b>\$3,800,255</b> |
|                      | Link 4 | \$0  | \$1,600,000          | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|                      | Link 5 | \$2,158,256  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| DRG 5                | Link 1 | \$324,696  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|                      | Link 2 | \$0  | \$320,000            | \$836,640                           | \$84,992                             | \$0  | \$0                       | <b>\$1,241,632</b> |
|                      | Link 3 | \$0  | \$640,000            | \$1,689,660                         | \$171,648                            | \$1,228,200                                | \$199,341                 | <b>\$3,928,849</b> |
|                      | Link 4 | \$0  | \$1,600,000          | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|                      | Link 5 | \$2,158,256  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| ALT E                | Link 1 | \$324,696  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|                      | Link 2 | \$0  | \$320,000            | \$776,880                           | \$84,992                             | \$0  | \$0                       | <b>\$1,181,872</b> |
|                      | Link 3 | \$0  | \$640,000            | \$1,605,240                         | \$175,616                            | \$71,200                                   | \$49,066                  | <b>\$2,541,122</b> |
|                      | Link 4 | \$0  | \$1,600,000          | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|                      | Link 5 | \$2,158,256  | \$640,000            | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |

|         |                    |          |    |      |           |
|---------|--------------------|----------|----|------|-----------|
| Project | Legacy SEIS        | Computed | TW | Date | 6/14/2004 |
| Subject | DRG Cost Estimates | Checked  |    | Date |           |
| Task    | Detention Sizing   | Sheet    |    | Of   |           |
| Job No. |                    | No.      |    |      |           |

### Volume of Runoff from Alignments in Developed Areas Only

|                        |                               |                       |  |
|------------------------|-------------------------------|-----------------------|--|
| Segment Length         |                               | SCS method            |  |
| Length East            | 4350 m                        | Description           | Area (ac) CN Area*CN                     |
| Length West            | 788 m                         | Paved Area            | 30.9506703 98 3033.16569                 |
| Total Length           | 5138 m                        | Vegetated Condition   | 71.1865418 70 4983.05792                 |
|                        | 16852.64 ft                   | Average CN            | 78.5                                     |
| Total Width of Roadway |                               | Initial Abstraction   | 0.55 inches                              |
| Pavement               | 264 ft, ROW                   | Watershed Storage     | 2.74 inches                              |
| Other                  | 80 ft                         | Precipitation (50 Yr) | 3.0 inches                               |
|                        | 184 ft                        | Direct Runoff (50 Yr) | 1.16 inches                              |
| Total Area             |                               | 50-Year Direct Runoff | 9.852 acre-ft                            |
| 102.137212 acres       |                               | Total Volume=         | 429156.828 ft <sup>3</sup>               |
| Calculated Ratio       | 0.00064 x Length = Basin Area | Depth                 | 3 ft, limited due to shallow groundwater |
|                        |                               | Area                  | 143052.276 ft <sup>2</sup>               |
|                        |                               | Area                  | 3.28 acres                               |

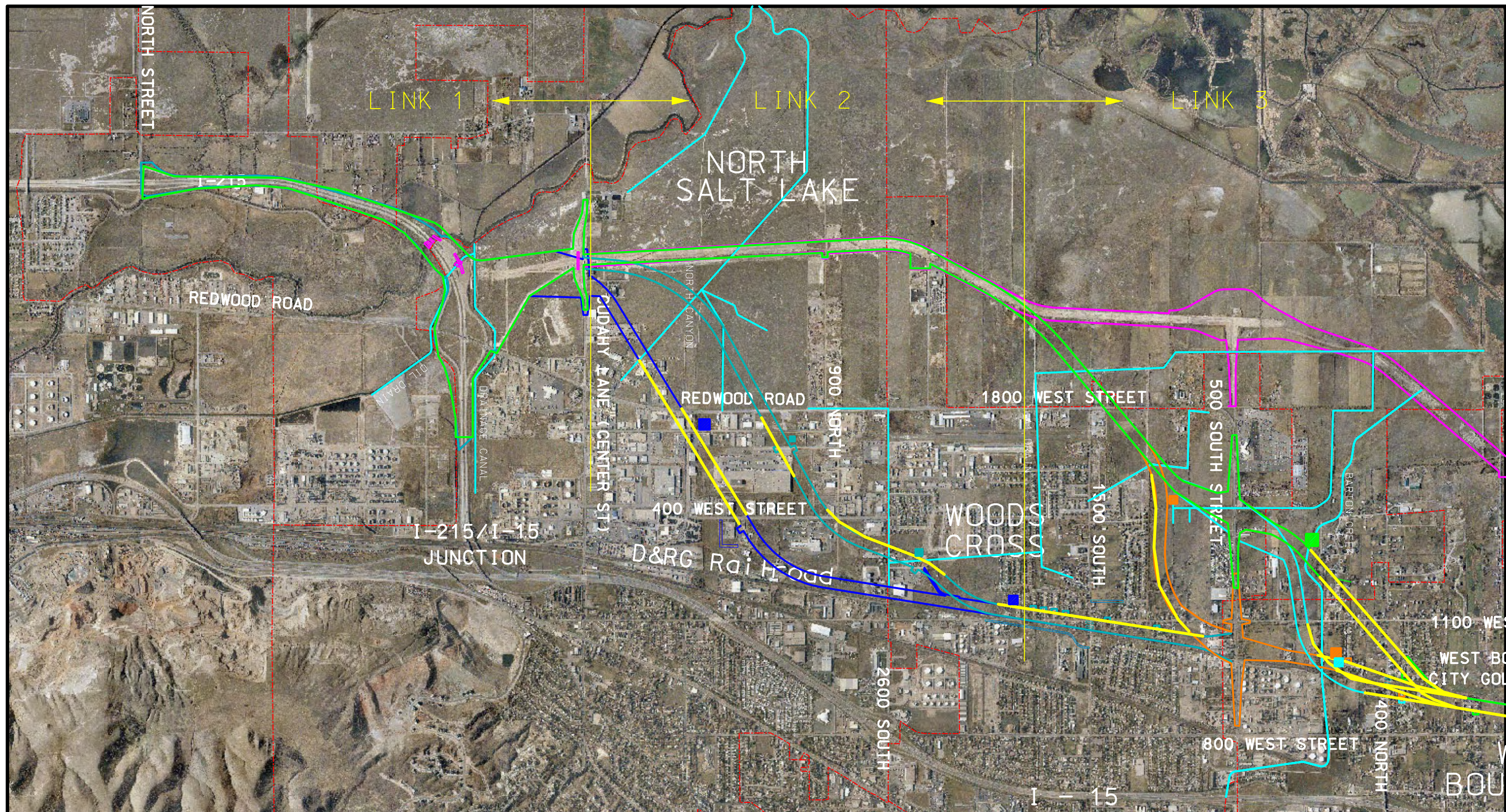
### Detention Areas

| DRG 1      |                        |                                  | DRG 2      |                        |                                  | DRG 3      |                        |                                  |
|------------|------------------------|----------------------------------|------------|------------------------|----------------------------------|------------|------------------------|----------------------------------|
| Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) |
| 1381       |                        |                                  | 482        | 0.31                   | 1255                             | 1182       | 0.76                   | 3076                             |
| 893        | 1.45                   | 5868                             | 969        | 0.62                   | 2509                             |            |                        |                                  |
| 1494       | 0.95                   | 3845                             | 1494       | 0.95                   | 3845                             |            |                        |                                  |
| 1109       |                        |                                  | 1109       |                        |                                  | 1109       |                        |                                  |
| 776        | 1.20                   | 4856                             | 776        | 1.20                   | 4856                             | 776        | 1.20                   | 4856                             |
| 3813       |                        |                                  | 3813       |                        |                                  | 3813       |                        |                                  |
| 788        | 2.94                   | 11898                            | 788        | 2.94                   | 11898                            | 788        | 2.94                   | 11898                            |

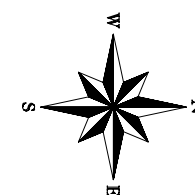
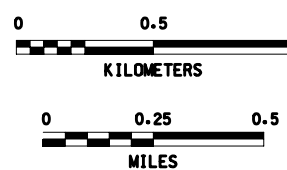
| DRG 4      |                        |                                  | DRG 5      |                        |                                  | ALT E      |                        |                                  |
|------------|------------------------|----------------------------------|------------|------------------------|----------------------------------|------------|------------------------|----------------------------------|
| Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) |
| 1339       | 0.86                   | 3480                             | 1377       |                        |                                  | 1639       | 1.05                   | 4249                             |
|            |                        |                                  | 1566       | 1.88                   | 7608                             |            |                        |                                  |
| 4350       |                        |                                  | 3813       |                        |                                  |            |                        |                                  |
| 788        | 3.28                   | 13274                            | 788        | 2.94                   | 11898                            |            |                        |                                  |





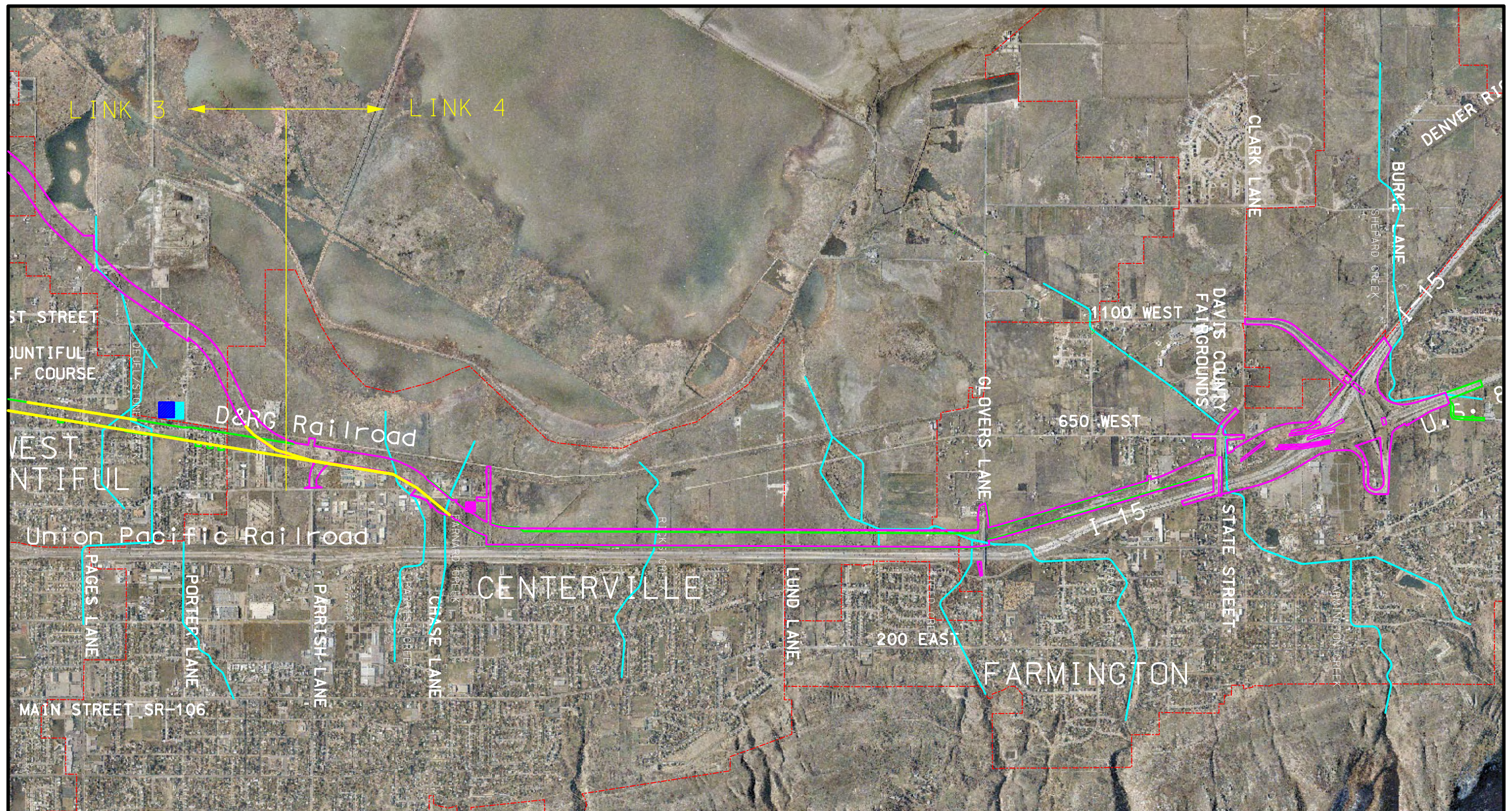
**LEGEND**

- |        |                              |
|--------|------------------------------|
| D&RG 1 | ALTERNATIVE E                |
| D&RG 2 | MUNICIPAL BOUNDARY           |
| D&RG 3 | STREAMS                      |
| D&RG 4 | AREAS W/ ADDITIONAL CONTROLS |
| D&RG 5 | DETENTION BASINS             |



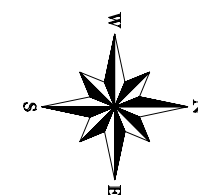
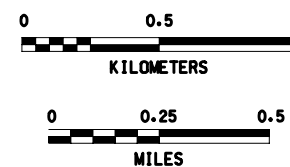
**ATTACHMENT 12  
FIGURE 1  
DRAINAGE**





# LEGEND

- D&RG 1
- D&RG 2
- D&RG 3
- D&RG 4
- D&RG 5
- ALTERNATIVE E
- MUNICIPAL BOUNDARY
- STREAMS
- STORMWATER CONTROLS
- DETENTION BASINS



## ATTACHMENT 12 FIGURE 2 DRAINAGE



|                |   |                 |     |             |           |
|----------------|---|-----------------|-----|-------------|-----------|
| <b>Project</b> | Legacy SEIS                               | <b>Computed</b> | BRS | <b>Date</b> | 5/18/2004 |
| <b>Subject</b> | DRG Cost Estimates                        | <b>Checked</b>  |     | <b>Date</b> |           |
| <b>Task</b>    | Excavation for Frontage Roads/Cul-de-sacs | <b>Sheet</b>    |     | <b>Of</b>   |           |
| <b>Job No.</b> |   | <b>No.</b>      |     |             |           |

**Contract Price for Termini Interchanges**

North

Interchange      **\$321,962**    Link 5

South

Interchange      **\$117,623**    Link 1

For frontage roads, cross streets, and cul-de-sacs, area will be excavated to 1 m and replaced with new pavement section.

**Frontage Roads and Cross Streets**

| Pavement widths  | (ft) | Quantity | Total (ft) |               |
|------------------|------|----------|------------|---------------|
| Outside Shoulder | 8    | 2        | 16         |               |
| Travel Lanes     | 12   | 2        | 24         |               |
| Median Lane      | 14   | 1        | 14         |               |
|                  |      |          | <b>54</b>  | <b>16.5 m</b> |

**Cul-de-Sac**      R=15 mPavement Area      700      m<sup>2</sup>**Cross Streets**

L (m) = 200

Area (m<sup>2</sup>)= 3300      For each crossing

| Alt   |        | Cross Streets<br>excluding<br>interchanges | Area (m <sup>2</sup> ) |
|-------|--------|--|------------------------|
| DRG 1 | Link 1 | 0  | 0                      |
|       | Link 2 | 4  | 13,200                 |
|       | Link 3 | 5  | 16,500                 |
|       | Link 4 | 3  | 9,900                  |
|       | Link 5 | 0  | 0                      |
| DRG 2 | Link 1 | 0  | 0                      |
|       | Link 2 | 4  | 13,200                 |
|       | Link 3 | 5  | 16,500                 |
|       | Link 4 | 3  | 9,900                  |
|       | Link 5 | 0  | 0                      |
| DRG 3 | Link 1 | 0  | 0                      |
|       | Link 2 | 0  | 0                      |
|       | Link 3 | 7  | 23,100                 |
|       | Link 4 | 3  | 9,900                  |
|       | Link 5 | 0  | 0                      |
| DRG 4 | Link 1 | 0  | 0                      |
|       | Link 2 | 0  | 0                      |
|       | Link 3 | 7  | 23,100                 |
|       | Link 4 | 3  | 9,900                  |
|       | Link 5 | 0  | 0                      |
| DRG 5 | Link 1 | 0  | 0                      |
|       | Link 2 | 0  | 0                      |
|       | Link 3 | 7  | 23,100                 |
|       | Link 4 | 3  | 9,900                  |
|       | Link 5 | 0  | 0                      |
| ALT E | Link 1 | 0  | 0                      |
|       | Link 2 | 0  | 0                      |
|       | Link 3 | 1  | 3,300                  |
|       | Link 4 | 3  | 9,900                  |
|       | Link 5 | 0  | 0                      |

**Frontage Roads**

| Alt   |        | Frontage<br>Roads/Cross<br>Streets (m) | Area (m2) |
|-------|--------|--|-----------|
| DRG 1 | Link 1 | 0                                      | 0         |
|       | Link 2 | 957                                    | 15,784    |
|       | Link 3 | 988                                    | 16,300    |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| DRG 2 | Link 1 | 0                                      | 0         |
|       | Link 2 | 287                                    | 4,739     |
|       | Link 3 | 988                                    | 16,300    |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| DRG 3 | Link 1 | 0                                      | 0         |
|       | Link 2 | 0                                      | 0         |
|       | Link 3 | 240                                    | 3,967     |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| DRG 4 | Link 1 | 0                                      | 0         |
|       | Link 2 | 0                                      | 0         |
|       | Link 3 | 240                                    | 3,967     |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| DRG 5 | Link 1 | 0                                      | 0         |
|       | Link 2 | 0                                      | 0         |
|       | Link 3 | 451                                    | 7,433     |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| ALT E | Link 1 | 0                                      | 0         |
|       | Link 2 | 0                                      | 0         |
|       | Link 3 | 187                                    | 3,090     |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |

| <b>Cul-de-Sac</b> |        |             |           |
|-------------------|--------|-------------|-----------|
| Alt               |        | Cul-de-sacs | Area (m2) |
| DRG 1             | Link 1 | 0           | 0         |
|                   | Link 2 | 1           | 700       |
|                   | Link 3 | 13          | 9,100     |
|                   | Link 4 | 1           | 700       |
|                   | Link 5 | 0           | 0         |
| DRG 2             | Link 1 | 0           | 0         |
|                   | Link 2 | 3           | 2,100     |
|                   | Link 3 | 13          | 9,100     |
|                   | Link 4 | 1           | 700       |
|                   | Link 5 | 0           | 0         |
| DRG 3             | Link 1 | 0           | 0         |
|                   | Link 2 | 1           | 700       |
|                   | Link 3 | 7           | 4,900     |
|                   | Link 4 | 1           | 700       |
|                   | Link 5 | 0           | 0         |
| DRG 4             | Link 1 | 0           | 0         |
|                   | Link 2 | 1           | 700       |
|                   | Link 3 | 6           | 4,200     |
|                   | Link 4 | 1           | 700       |
|                   | Link 5 | 0           | 0         |
| DRG 5             | Link 1 | 0           | 0         |
|                   | Link 2 | 1           | 700       |
|                   | Link 3 | 6           | 4,200     |
|                   | Link 4 | 1           | 700       |
|                   | Link 5 | 0           | 0         |
| ALT E             | Link 1 | 0           | 0         |
|                   | Link 2 | 1           | 700       |
|                   | Link 3 | 2           | 1,400     |
|                   | Link 4 | 1           | 700       |
|                   | Link 5 | 0           | 0         |

**Excavation**

Cost for excavation UDOT Bid item 023160020 \$5.25/m3

Depth (m)= 1

| Alt   |        | Total area<br>(m2) | Excavation<br>Volume (m3) | Total Cost |
|-------|--------|--------------------|---------------------------|------------|
| DRG 1 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 29,684             | 29,684                    | \$ 155,840 |
|       | Link 3 | 41,900             | 41,900                    | \$ 219,977 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| DRG 2 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 20,039             | 20,039                    | \$ 105,204 |
|       | Link 3 | 41,900             | 41,900                    | \$ 219,977 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| DRG 3 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 700                | 700                       | \$ 3,675   |
|       | Link 3 | 31,967             | 31,967                    | \$ 167,825 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| DRG 4 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 700                | 700                       | \$ 3,675   |
|       | Link 3 | 31,267             | 31,267                    | \$ 164,150 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| DRG 5 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 700                | 700                       | \$ 3,675   |
|       | Link 3 | 34,733             | 34,733                    | \$ 182,350 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| ALT E | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 700                | 700                       | \$ 3,675   |
|       | Link 3 | 7,790              | 7,790                     | \$ 40,900  |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |





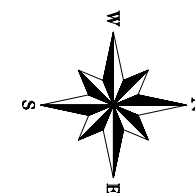
LEGEND

- ↗ D&RG 1
- ↗ D&RG 2
- ↗ D&RG 3
- ↗ D&RG 4
- ↗ D&RG 5

↗ ALTERNATIVE E

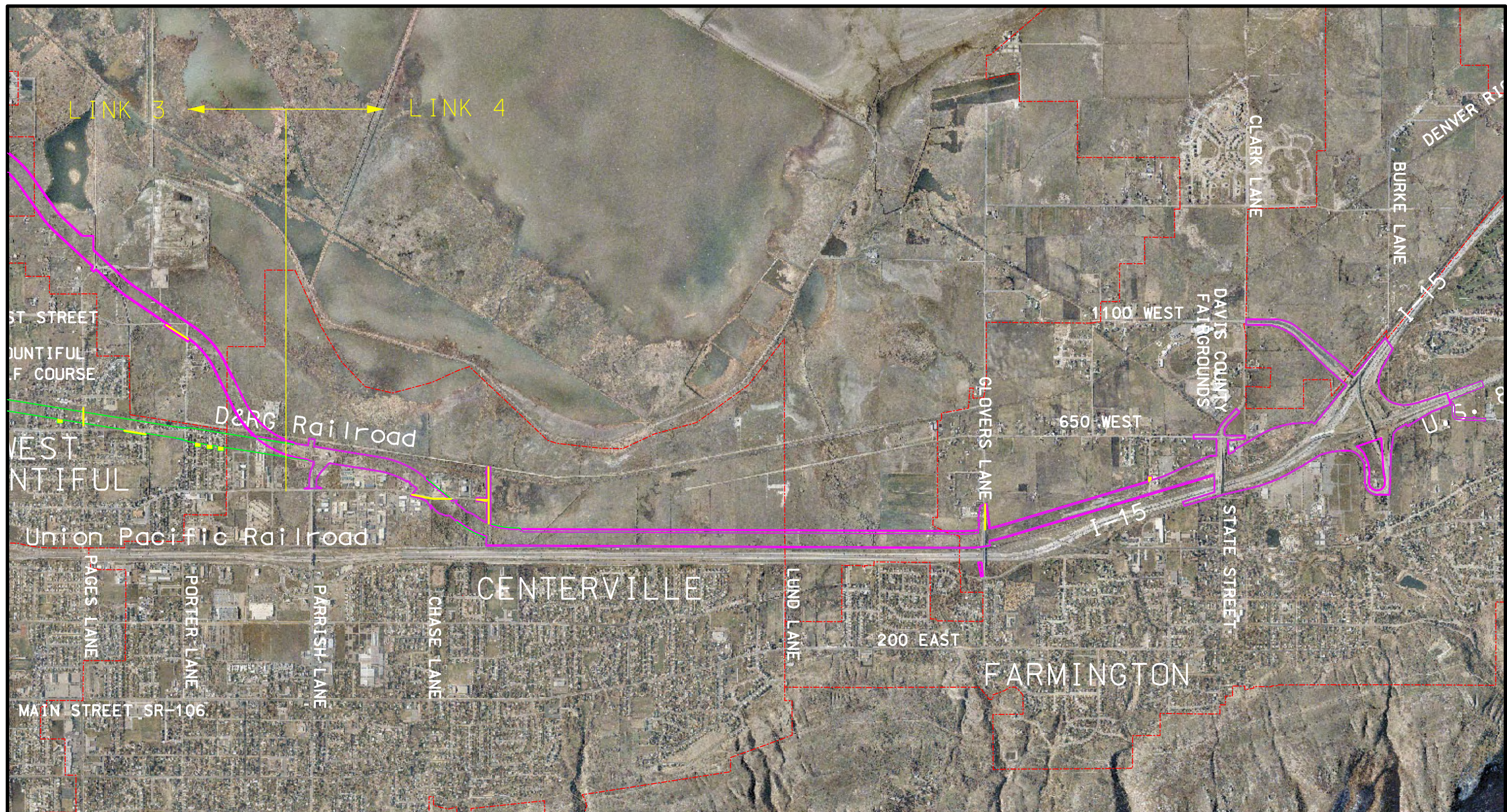
↗ MUNICIPAL BOUNDARY

AREAS REQUIRING EXCAVATION  
(CROSS STREETS, FRONTAGE ROADS, AND  
CUL-DE-SACS)



ATTACHMENT 13  
FIGURE 1  
EXCAVATION





# LEGEND

- ✓ D&RG 1
- ✓ D&RG 2
- ✓ D&RG 3
- ✓ D&RG 4
- ✓ D&RG 5

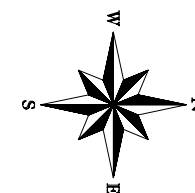
✓ ALTERNATIVE E

✓ MUNICIPAL BOUNDARY

AREAS REQUIRING EXCAVATION  
(CROSS STREETS, FRONTAGE ROADS, AND  
CUL-DE-SACS)

0 0.5 1  
KILOMETERS

0 0.25 0.5  
MILES



## ATTACHMENT 13 FIGURE 2 EXCAVATION

Legacy Parkway Supplemental EIS  
JUNE 2004



|         |                      |          |     |      |          |
|---------|----------------------|----------|-----|------|----------|
| Project | Legacy SEIS          | Computed | BRS | Date | 5/3/2004 |
| Subject | DRG Cost Estimates   | Checked  |     | Date |          |
| Task    | Demolition Estimates | Sheet    |     | Of   |          |
| Job No. |                      | No.      |     |      |          |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

North

Interchange \$1,065,007 Link 5

South

Interchange \$315,963 Link 1

See Demolition.dgn for demolition areas for pavement, bridge structures, and RR.

No additional bridge structures will have to be demolished for the D&RG alternatives.

Demolition includes demolition of cross streets (asphalt pavement).

Approximately double the amount of mainline pavement will have to be demolished for the D&RG alts as opposed to the GSL.

Contract price for GSL, not including the structures was \$280,220, double that for DRG alts.

ROW costs include demolition items associated with each property including any parkinglots, driveways, structures, sidewalks, etc.

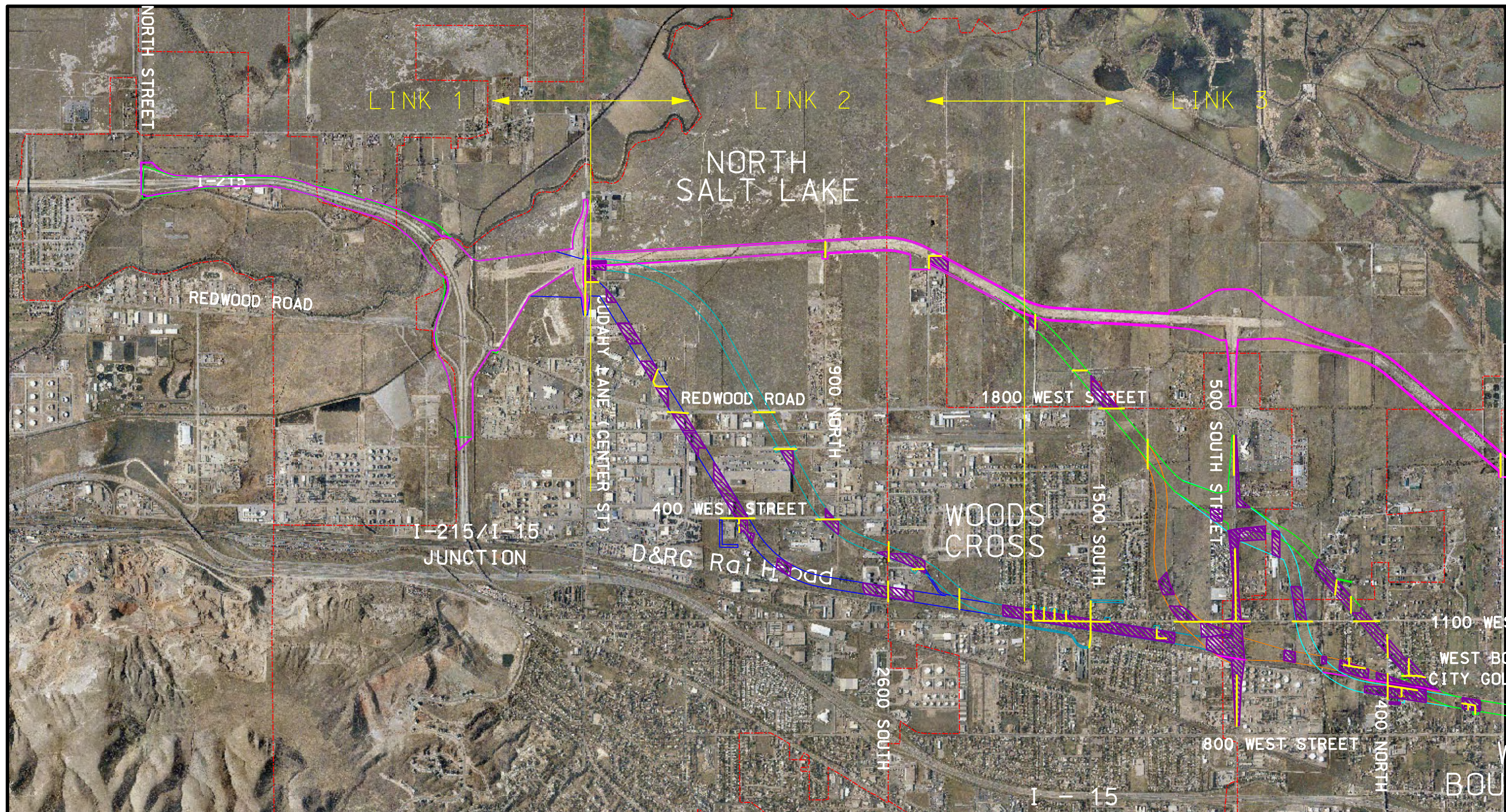
See asphalt summary sheet for street crossings and pavement widths.

UDOT Bid Item 022220040 \$2.89 /m2





| Alt   |        | Cross Streets excluding interchanges | Cross Street Pavement Area (m2) | Additional existing pavement (m) | Width same as cross streets (m) | Additional Pavement area (m2) | Total Pavement area (m2) | Cost      |
|-------|--------|--------------------------------------|---------------------------------|----------------------------------|---------------------------------|-------------------------------|--------------------------|-----------|
| DRG 1 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 4                                    | 13,200                          | 572                              | 16.5                            | 9,443                         | 22,643                   | \$65,438  |
|       | Link 3 | 5                                    | 16,500                          | 2,903                            | 16.5                            | 47,900                        | 64,400                   | \$186,115 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| DRG 2 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 4                                    | 13,200                          | 227                              | 16.5                            | 3,746                         | 16,946                   | \$48,972  |
|       | Link 3 | 5                                    | 16,500                          | 2,903                            | 16.5                            | 47,900                        | 64,400                   | \$186,115 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| DRG 3 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 0                                    | 0                               | 292                              | 16.5                            | 4,815                         | 4,815                    | \$13,914  |
|       | Link 3 | 7                                    | 23,100                          | 2,016                            | 16.5                            | 33,257                        | 56,357                   | \$162,873 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| DRG 4 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 0                                    | 0                               | 292                              | 16.5                            | 4,815                         | 4,815                    | \$13,914  |
|       | Link 3 | 7                                    | 23,100                          | 1,804                            | 16.5                            | 29,766                        | 52,866                   | \$152,783 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| DRG 5 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 0                                    | 0                               | 292                              | 16.5                            | 4,815                         | 4,815                    | \$13,914  |
|       | Link 3 | 7                                    | 23,100                          | 2,051                            | 16.5                            | 33,842                        | 56,942                   | \$164,561 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| ALT E | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 0                                    | 0                               | 292                              | 16.5                            | 4,815                         | 4,815                    | \$13,914  |
|       | Link 3 | 1                                    | 3,300                           | 703                              | 16.5                            | 11,601                        | 14,901                   | \$43,064  |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |

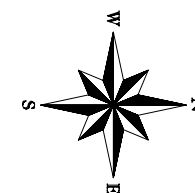
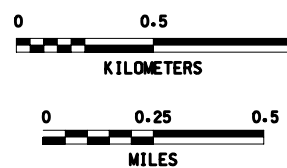
| Alt   |        | Cost of<br>termini<br>interchanges | Total Cost         |
|-------|--------|------------------------------------|--------------------|
| DRG1  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$65,438</b>    |
|       | Link 3 | \$0                                | <b>\$186,115</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| DRG2  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$48,972</b>    |
|       | Link 3 | \$0                                | <b>\$186,115</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| DRG3  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$13,914</b>    |
|       | Link 3 | \$0                                | <b>\$162,873</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| DRG4  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$13,914</b>    |
|       | Link 3 | \$0                                | <b>\$152,783</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| DRG5  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$13,914</b>    |
|       | Link 3 | \$0                                | <b>\$164,561</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| ALT E | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$13,914</b>    |
|       | Link 3 | \$0                                | <b>\$43,064</b>    |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |





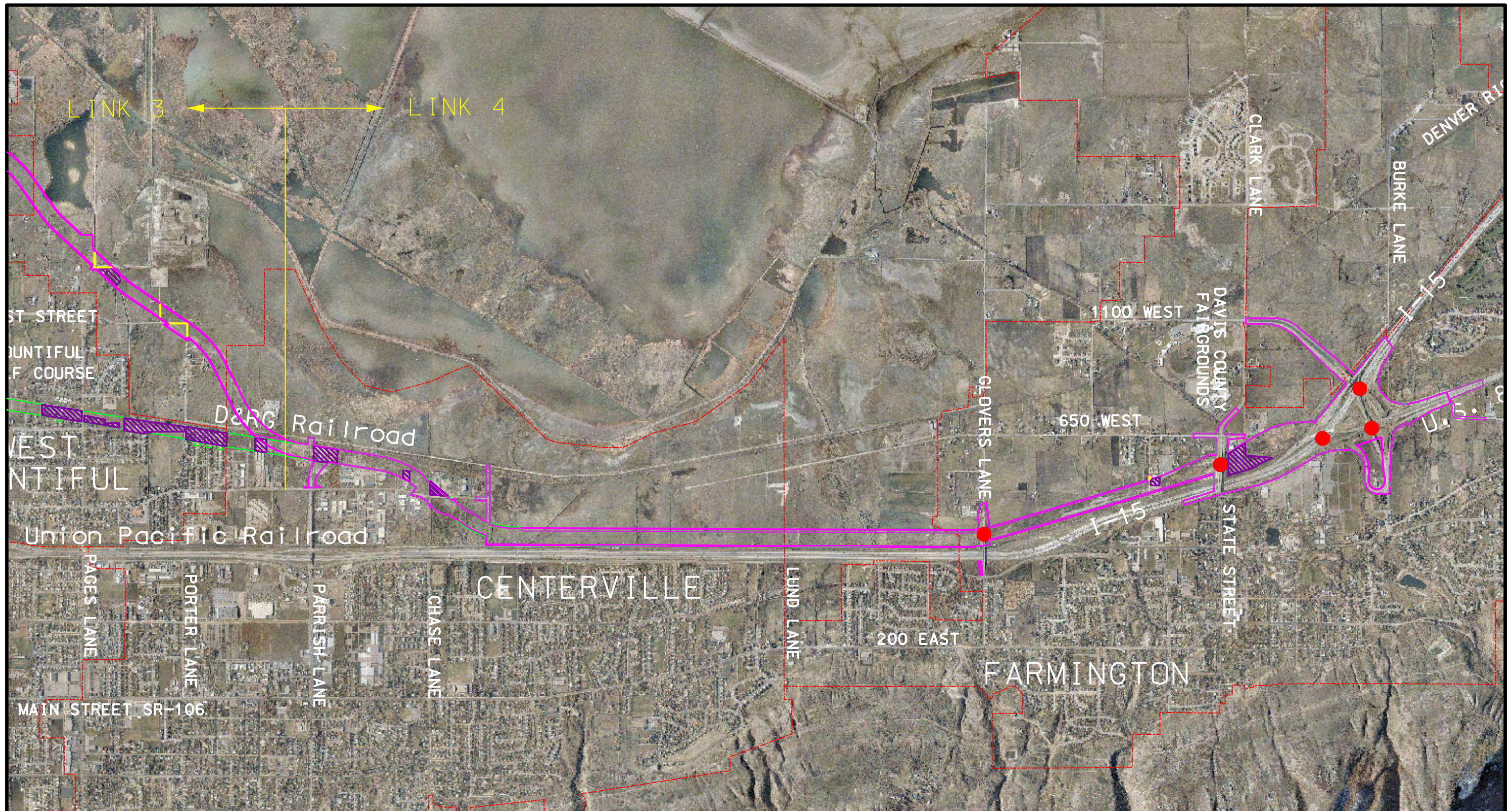
# LEGEND

- |  |  |
|--|--|
|  D&RG 1 |  ALTERNATIVE E        |
|  D&RG 2 |  MUNICIPAL BOUNDARY   |
|  D&RG 3 |  PAVEMENT             |
|  D&RG 4 |  RAILROAD             |
|  D&RG 5 |  EXISTING DEVELOPMENT |



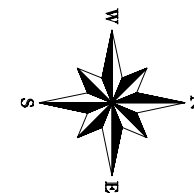
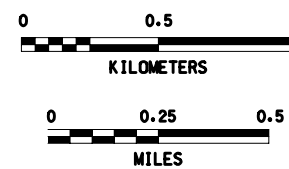
ATTACHMENT 14  
FIGURE 1  
DEMOLITION





# LEGEND

- |  |  |
|--|--|
|  D&RG 1 |  ALTERNATIVE E        |
|  D&RG 2 |  MUNICIPAL BOUNDARY   |
|  D&RG 3 |  PAVEMENT             |
|  D&RG 4 |  RAILROAD             |
|  D&RG 5 |  EXISTING DEVELOPMENT |



ATTACHMENT 14  
FIGURE 2  
DEMOLITION



|                |                           |                 |                      |
|----------------|---------------------------|-----------------|----------------------|
| <b>Project</b> | Legacy SEIS               | <b>Computed</b> | <b>Date</b> 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates        | <b>Checked</b>  | <b>Date</b>          |
| <b>Task</b>    | Traffic Control Estimates | <b>Sheet</b>    | <b>Of</b>            |
| <b>Job No.</b> |                           | <b>No.</b>      |                      |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.  
Broken into cost per link by percent of length in each alternative.

#### Contract Price for Termini Interchanges

|                  |                    |
|------------------|--------------------|
| North            |                    |
| Interchange      | \$1,426,322        |
| South            |                    |
| Interchange      | \$475,861          |
| Mainline         | \$151,668          |
| <b>Subtotal=</b> | <b>\$2,053,851</b> |

|           |        | % based on L | Mainline    |
|-----------|--------|--------------|-------------|
| DRG 1 & 2 | Link 2 | 26.28%       | \$39,852.01 |
|           | Link 3 | 34.17%       | \$51,830.65 |
|           | Link 4 | 39.23%       | \$59,499.36 |
| DRG 3     | Link 2 | 19.85%       | \$30,099.69 |
|           | Link 3 | 41.24%       | \$62,547.52 |
|           | Link 4 | 39.23%       | \$59,499.36 |
| DRG 4     | Link 2 | 19.85%       | \$30,099.69 |
|           | Link 3 | 41.24%       | \$62,547.52 |
|           | Link 4 | 39.23%       | \$59,499.36 |
| DRG 5     | Link 2 | 19.85%       | \$30,099.69 |
|           | Link 3 | 41.24%       | \$62,547.52 |
|           | Link 4 | 39.23%       | \$59,499.36 |
| Alt E     | Link 2 | 19.85%       | \$30,099.69 |
|           | Link 3 | 41.24%       | \$62,547.52 |
|           | Link 4 | 39.23%       | \$59,499.36 |

Apply a 10% increase for RR flagging.

Apply a 20% increase for increased density.

Add 30% to contract price for Alternative E for all D&RG alternatives.

The 30% increase only counts in links that differ from the Alt E alignment.

| Alt   |        | <b>Total Cost</b>  |
|-------|--------|--------------------|
| DRG1  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$51,808</b>    |
|       | Link 3 | <b>\$67,380</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| DRG2  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$51,808</b>    |
|       | Link 3 | <b>\$67,380</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| DRG3  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$30,100</b>    |
|       | Link 3 | <b>\$81,312</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| DRG4  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$30,100</b>    |
|       | Link 3 | <b>\$81,312</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| DRG5  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$30,100</b>    |
|       | Link 3 | <b>\$81,312</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| ALT E | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$30,100</b>    |
|       | Link 3 | <b>\$62,548</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |

|         |                       |          |     |      |           |
|---------|-----------------------|----------|-----|------|-----------|
| Project | Legacy SEIS           | Computed | BRS | Date | 5/18/2004 |
| Subject | DRG Cost Estimates    | Checked  |     | Date |           |
| Task    | Landscaping Estimates | Sheet    |     | Of   |           |
| Job No. |                       | No.      |     |      |           |

Landscaping base cost of \$10,000,000 was for the original proposed project budget. Landscaping is planned for areas adjacent to the trail, these will be planted with trees and shrubs, native grasses will be used in the median and along roadway side slopes.

|             | Landscaping         | Irrigation |
|-------------|---------------------|------------|
| North       |                     |            |
| Interchange | \$2,582,692         |            |
| South       |                     |            |
| Interchange | \$3,515,325         |            |
| Mainline    | \$3,901,983         |            |
|             | <b>\$10,000,000</b> |            |

The 264 ft ROW does not accommodate a berm, therefore there will be a reduction in the amount of landscaping. The original ROW width was 328 ft.

328 ft= \$10,000,000  
264 ft= X

Amount of landscaping based on a ratio equal to the width reduction.

$$X = (264/328) * \$10,000,000$$

$$X = \$8,048,780$$

|             |                      |
|-------------|----------------------|
| North       |                      |
| Interchange | \$2,078,752 Link 5   |
| South       |                      |
| Interchange | \$2,829,408 Link 1   |
| Mainline    | \$3,140,620 Link 2-4 |
|             | <b>\$8,048,780</b>   |

|       |                   |        |                    |
|-------|-------------------|--------|--------------------|
| DRG 1 | <b>Total Cost</b> |        |                    |
|       | Link 1            |        | <b>\$2,829,408</b> |
|       | Link 2            | 26.28% | <b>\$825,224</b>   |
|       | Link 3            | 34.17% | <b>\$1,073,268</b> |
|       | Link 4            | 39.23% | <b>\$1,232,065</b> |
|       | Link 5            |        | <b>\$2,078,752</b> |
| DRG 2 | Link 1            |        | <b>\$2,829,408</b> |
|       | Link 2            | 26.28% | <b>\$825,224</b>   |
|       | Link 3            | 34.17% | <b>\$1,073,268</b> |
|       | Link 4            | 39.23% | <b>\$1,232,065</b> |
|       | Link 5            |        | <b>\$2,078,752</b> |
| DRG 3 | Link 1            |        | <b>\$2,829,408</b> |
|       | Link 2            | 19.85% | <b>\$623,281</b>   |
|       | Link 3            | 41.24% | <b>\$1,295,184</b> |
|       | Link 4            | 39.23% | <b>\$1,232,065</b> |
|       | Link 5            |        | <b>\$2,078,752</b> |
| DRG 4 | Link 1            |        | <b>\$2,829,408</b> |
|       | Link 2            | 19.85% | <b>\$623,281</b>   |
|       | Link 3            | 41.24% | <b>\$1,295,184</b> |
|       | Link 4            | 39.23% | <b>\$1,232,065</b> |
|       | Link 5            |        | <b>\$2,078,752</b> |
| DRG 5 | Link 1            |        | <b>\$2,829,408</b> |
|       | Link 2            | 19.85% | <b>\$623,281</b>   |
|       | Link 3            | 41.24% | <b>\$1,295,184</b> |
|       | Link 4            | 39.23% | <b>\$1,232,065</b> |
|       | Link 5            |        | <b>\$2,078,752</b> |
| Alt E | Link 1            |        | <b>\$2,829,408</b> |
|       | Link 2            | 19.85% | <b>\$623,281</b>   |
|       | Link 3            | 41.24% | <b>\$1,295,184</b> |
|       | Link 4            | 39.23% | <b>\$1,232,065</b> |
|       | Link 5            |        | <b>\$2,078,752</b> |



|                |                    |                 |     |             |          |
|----------------|--------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Lighting Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                    | <b>No.</b>      |     |             |          |

Lighting costs assume lighting the interchanges only. Estimate is actual cost from FAK contract.

**Contract Price all Interchanges**

North

Interchange      \$1,214,615    Link 5

South

Interchange      \$157,823    Link 1

500 South

Interchange      \$129,289    Link 3

Parrish Lane

Interchange      \$128,294    Link 4

**Total=    \$1,630,021**

|                |                               |                 |     |             |          |
|----------------|-------------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS                   | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates            | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Petroleum Pipelined Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                               | <b>No.</b>      |     |             |          |

- The relocations for Link 1 are already contracted out as shown below. This same amount will be assumed in the DRG Alternatives.
- Link 4 is the same for all alternatives. Since Alternative E has been contracted that amount will be used for all alternatives.
- There are no relocations located in Link 5.

Petroleum Pipeline Relocation Cost= \$650/m

#### Petroleum Pipelines

| Alt  |        | Tesoro (m) | Chevron (m) | Pioneer (m) | Total (m) | Total (mi) | Cost               |
|------|--------|------------|-------------|-------------|-----------|------------|--------------------|
| DRG1 | Link 2 | 724        | 477         | 217         | 1418      | 0.88       | <b>\$921,726</b>   |
|      | Link 3 | 568        | 1151        | 3451        | 5170      | 3.21       | <b>\$3,360,227</b> |
| DRG2 | Link 2 | 0          | 231         | 217         | 448       | 0.28       | <b>\$291,382</b>   |
|      | Link 3 | 568        | 1151        | 3451        | 5170      | 3.21       | <b>\$3,360,227</b> |
| DRG3 | Link 2 | 0          | 0           | 0           | 0         | 0.00       | <b>\$0</b>         |
|      | Link 3 | 241        | 881         | 3063        | 4185      | 2.60       | <b>\$2,720,517</b> |
| DRG4 | Link 2 | 0          | 0           | 0           | 0         | 0.00       | <b>\$0</b>         |
|      | Link 3 | 82         | 1316        | 3330        | 4728      | 2.94       | <b>\$3,072,960</b> |
| DRG5 | Link 2 | 0          | 0           | 0           | 0         | 0.00       | <b>\$0</b>         |
|      | Link 3 | 97         | 1310        | 2659        | 4065      | 2.53       | <b>\$2,642,517</b> |

#### Contract Price

ALT E

|  |                       |        |
|--|-----------------------|--------|
| Amoco Replace 150mm & 200 mm gas lines     | <b>\$150,840.00</b>   | Link 1 |
| Pioneer Replace 200mm Gas Line             | <b>\$108,599.00</b>   | Link 1 |
| Amoco Relocate 2 730MM Pipes               | <b>\$1,101,130.00</b> | Link 4 |
| Chevron - Relocate Line to 90 Deg Crossing | <b>\$530,870.00</b>   | Link 3 |
| Pioneer - Relocate 730MM Line              | <b>\$792,775.00</b>   | Link 4 |

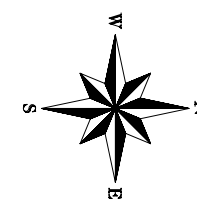
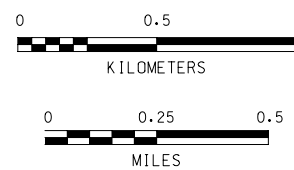
Link 1                    **\$259,439**  
Link 4                    **\$1,893,905**





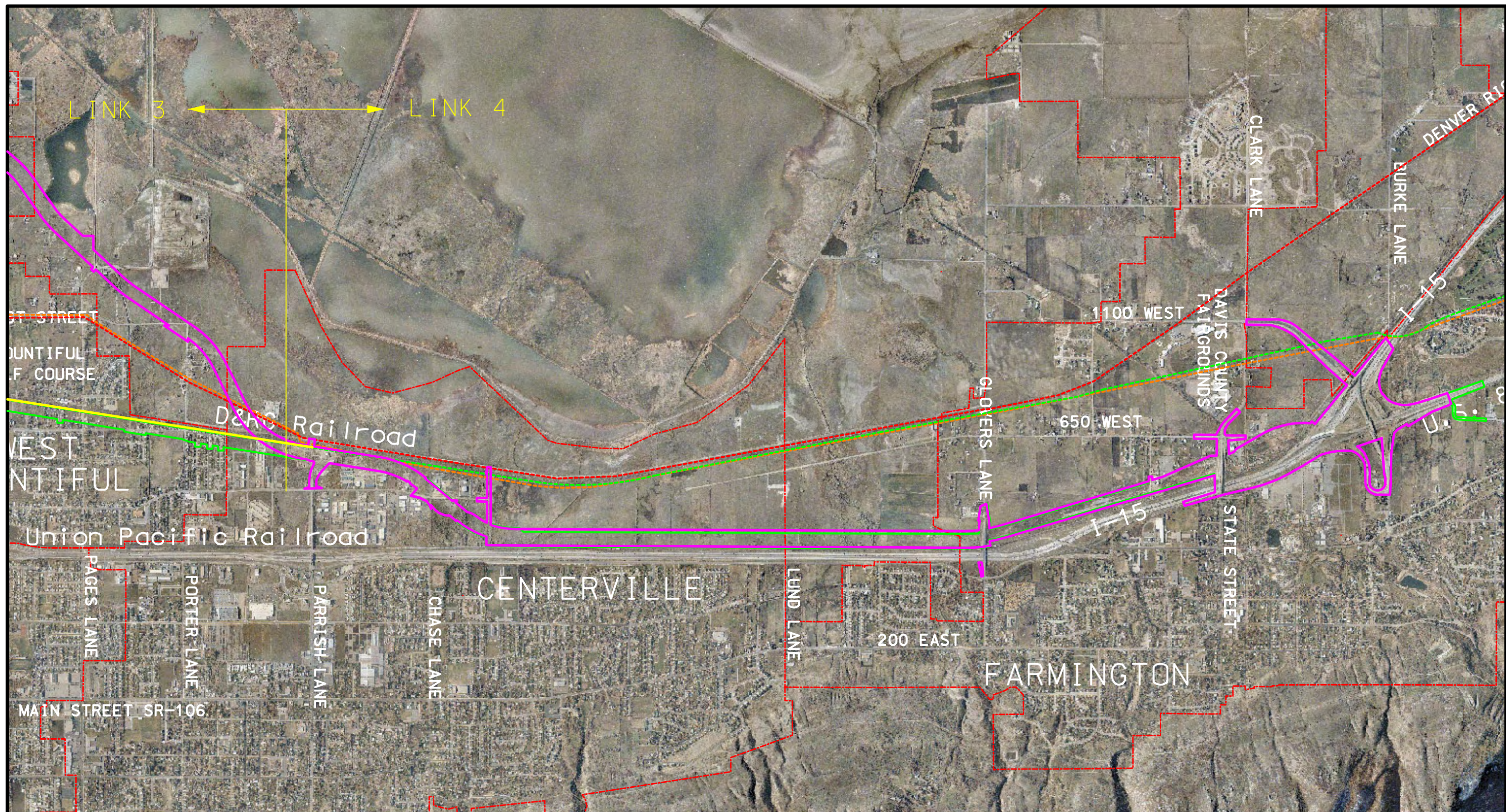
# LEGEND

- |                 |                               |
|-----------------|-------------------------------|
| ∨ D&RG 1        | ∨ MUNICIPAL BOUNDARY          |
| ∨ D&RG 2        | — TESORO PIPELINE             |
| ∨ D&RG 3        | — CHEVRON PIPELINE            |
| ∨ D&RG 4        | — PIONEER PIPELINE            |
| ∨ D&RG 5        | — IMPACTED PETROLEUM PIPELINE |
| ∨ ALTERNATIVE E |                               |



ATTACHMENT 18  
FIGURE 1  
PETROLEUM PIPELINES



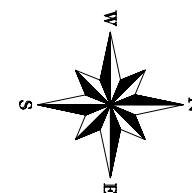


# LEGEND

- |                 |                                 |
|-----------------|---------------------------------|
| ✓ D&RG 1        | ✓ MUNICIPAL BOUNDARY            |
| ✓ D&RG 2        | --- TESORO PIPELINE             |
| ✓ D&RG 3        | --- CHEVRON PIPELINE            |
| ✓ D&RG 4        | --- PIONEER PIPELINE            |
| ✓ D&RG 5        | --- IMPACTED PETROLEUM PIPELINE |
| ✓ ALTERNATIVE E |                                 |

0 0.5 1  
KILOMETERS

0 0.25 0.5  
MILES



ATTACHMENT 18  
FIGURE 2  
PETROLEUM PIPELINES



|                |                    |                 |     |             |          |
|----------------|--------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | ATMS Estimates     | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                    | <b>No.</b>      |     |             |          |

ATMS cost are based on actual cost from FAK contract.

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

**Contract Price**

|               |   |                    |
|---------------|---|--------------------|
| Link 1        | South Interchange                                     | \$1,140,936        |
| Link 2        |   | \$0                |
| Link 3        | 500 South Interchange                                 | \$598,142          |
| Link 4        | Glovers Lane Interchange,<br>Parrish Lane Interchange | \$1,202,006        |
| Link 5        | North Interchange                                     | \$1,958,849        |
| <b>Total=</b> |   | <b>\$4,899,933</b> |

|                |                    |                 |    |             |           |
|----------------|--------------------|-----------------|----|-------------|-----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | DW | <b>Date</b> | 5/14/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |    | <b>Date</b> |           |
| <b>Task</b>    | ROW Estimates      | <b>Sheet</b>    |    | <b>Of</b>   |           |
| <b>Job No.</b> |                    | <b>No.</b>      |    |             |           |

## ROW Cost Estimates

|             |                       |
|-------------|-----------------------|
|             | <b>From Dave West</b> |
| <b>DRG1</b> | <b>\$177,000,000</b>  |
| <b>DRG2</b> | <b>\$176,000,000</b>  |
| <b>DRG3</b> | <b>\$116,000,000</b>  |
| <b>DRG4</b> | <b>\$118,000,000</b>  |
| <b>DRG5</b> | <b>\$123,000,000</b>  |
| <b>AltE</b> | <b>\$63,690,000</b>   |

Estimated by taking the total ROW cost spreadsheets provided by Dave West and dividing the data at the approximate link boundaries. Could not use Alt E estimates for links because these estimates include Legacy Nature Preserve costs. Used DRG1 ROW estimate, divided into links, and applied to other alternatives where appropriate.

## Links Estimates

|             | <b>1</b>    | <b>2</b>            | <b>3</b>            | <b>4</b>     | <b>5</b>    | <b>Σ Links</b> |
|-------------|-------------|---------------------|---------------------|--------------|-------------|----------------|
| <b>DRG1</b> | \$7,252,216 | \$52,100,646        | \$86,518,518        | \$21,867,558 | \$9,002,001 | \$177,000,000  |
| <b>DRG2</b> | \$7,252,216 | <b>\$51,359,707</b> | \$86,518,518        | \$21,867,558 | \$9,002,001 | \$176,000,000  |
| <b>DRG3</b> | \$7,252,216 | \$5,769,824         | <b>\$72,108,401</b> | \$21,867,558 | \$9,002,001 | \$116,000,000  |
| <b>DRG4</b> | \$7,252,216 | \$5,769,824         | <b>\$74,108,401</b> | \$21,867,558 | \$9,002,001 | \$118,000,000  |
| <b>DRG5</b> | \$7,252,216 | \$5,769,824         | <b>\$79,108,401</b> | \$21,867,558 | \$9,002,001 | \$123,000,000  |
| <b>AltE</b> | \$7,252,216 | \$5,769,824         | <b>\$19,798,401</b> | \$21,867,558 | \$9,002,001 | \$63,690,000   |

|  |   |
|--|---|
|  | Estimated Link cost   |
|  | copied value  |
|  | Calculated link cost, based on the total cost minus ROW costs estimated for other links |

|         |                              |          |    |      |           |
|---------|------------------------------|----------|----|------|-----------|
| Project | Legacy SEIS                  | Computed | TW | Date | 2/14/2004 |
| Subject | DRG Cost Estimates           | Checked  |    | Date |           |
| Task    | Wetland Mitigation Estimates | Sheet    |    | Of   |           |
| Job No. |                              | No.      |    |      |           |

| Wetlands Mitigation Costs                                |                           |
|--|---------------------------|
| <b>Alternative E</b>                                     | <b>DRG Cost Estimates</b> |
| Actual ROW Costs for Mitigation Property (per Dave West) | \$20,500,000              |
| Improvement Costs  | \$4,500,000               |
| Total=   | \$25,000,000              |
| Preferred Alternative wetland impacts                    | 114 acres                 |
| Cost per acre=   | \$219,298                 |
| <b>Alignments</b>  |                           |
| <i>Alternative E (95-m)</i>                              |                           |
| Estimated Wetland Impacts=                               | 114                       |
| Wetland Mitigation Cost=                                 | \$25,000,000              |
| <i>Denver and Rio Grande (95-m)</i>                      |                           |
| DRG1 Wetland Impacts=                                    | 105.4                     |
| Wetland Mitigation Cost=                                 | \$23,114,035              |
| DRG2 Wetland Impacts=                                    | 114.4                     |
| Wetland Mitigation Cost=                                 | \$25,087,719              |
| DRG3 Wetland Impacts=                                    | 110.6                     |
| Wetland Mitigation Cost=                                 | \$24,254,386              |
| DRG4 Wetland Impacts=                                    | 109.6                     |
| Wetland Mitigation Cost=                                 | \$24,035,088              |
| DRG5 Wetland Impacts=                                    | 106                       |
| Wetland Mitigation Cost=                                 | \$23,245,614              |

| Alt   | Link   | Wetlands (acres) | Cost                |
|-------|--------|------------------|---------------------|
| DRG 1 | Link 1 | 19.7             | \$4,328,947         |
|       | Link 2 | 7.2              | \$1,570,175         |
|       | Link 3 | 22.9             | \$5,015,351         |
|       | Link 4 | 41.4             | \$9,087,719         |
|       | Link 5 | 14.2             | \$3,114,035         |
|       |        |                  | <b>\$23,116,228</b> |
| DRG 2 | Link 1 | 19.7             | \$4,328,947         |
|       | Link 2 | 18.0             | \$3,942,982         |
|       | Link 3 | 21.1             | \$4,616,228         |
|       | Link 4 | 41.4             | \$9,087,719         |
|       | Link 5 | 14.2             | \$3,114,035         |
|       |        |                  | <b>\$25,089,912</b> |
| DRG 3 | Link 1 | 19.7             | \$4,328,947         |
|       | Link 2 | 9.2              | \$2,026,316         |
|       | Link 3 | 26.0             | \$5,690,789         |
|       | Link 4 | 41.4             | \$9,087,719         |
|       | Link 5 | 14.2             | \$3,114,035         |
|       |        |                  | <b>\$24,247,807</b> |
| DRG 4 | Link 1 | 19.7             | \$4,328,947         |
|       | Link 2 | 9.2              | \$2,026,316         |
|       | Link 3 | 25.0             | \$5,473,684         |
|       | Link 4 | 41.4             | \$9,087,719         |
|       | Link 5 | 14.2             | \$3,114,035         |
|       |        |                  | <b>\$24,030,702</b> |
| DRG 5 | Link 1 | 19.7             | \$4,328,947         |
|       | Link 2 | 9.2              | \$2,026,316         |
|       | Link 3 | 21.4             | \$4,690,789         |
|       | Link 4 | 41.4             | \$9,087,719         |
|       | Link 5 | 14.2             | \$3,114,035         |
|       |        |                  | <b>\$23,247,807</b> |
| ALT E | Link 1 | 19.7             | \$4,328,947         |
|       | Link 2 | 9.2              | \$2,026,316         |
|       | Link 3 | 28.5             | \$6,256,579         |
|       | Link 4 | 41.4             | \$9,087,719         |
|       | Link 5 | 14.2             | \$3,114,035         |
|       |        |                  | <b>\$24,813,596</b> |

|                |                           |                 |     |             |           |
|----------------|---------------------------|-----------------|-----|-------------|-----------|
| <b>Project</b> | Legacy SEIS               | <b>Computed</b> | BRS | <b>Date</b> | 5/14/2004 |
| <b>Subject</b> | DRG Cost Estimates        | <b>Checked</b>  |     | <b>Date</b> |           |
| <b>Task</b>    | Hazardous Waste Estimates | <b>Sheet</b>    |     | <b>Of</b>   |           |
| <b>Job No.</b> |                           | <b>No.</b>      |     |             |           |

Remove Petroleum contaminated soils to a depth of 6 feet.

All soils removed within ROW

Soil excavation, hauling, disposal, and replacement = \$38/cu yd

| Alt                  | Koch Asphalt<br>(m2) | Silver Eagle<br>Refinery (m2) | Holly Corp<br>Refinery<br>(m2) | Total area<br>(m2) |
|----------------------|----------------------|-------------------------------|--------------------------------|--------------------|
| DRG1 - Link 2        | 13,721               | 0                             | 0                              | 13,721             |
| DRG 1, 2 - Link 2    | 0                    | 1,846                         | 0                              | 1,846              |
| DRG 1, 2 - Link 3    | 0                    | 2,666                         | 0                              | 2,666              |
| DRG 1, 2, 3 - Link 3 | 0                    | 0                             | 15,912                         | 15,912             |
| DRG 4                | 0                    | 0                             | 0                              | 0                  |
| DRG 5                | 0                    | 0                             | 0                              | 0                  |
| ALT E                | 0                    | 0                             | 0                              | 0                  |

Excavation depth 6 ft (1.83 m)

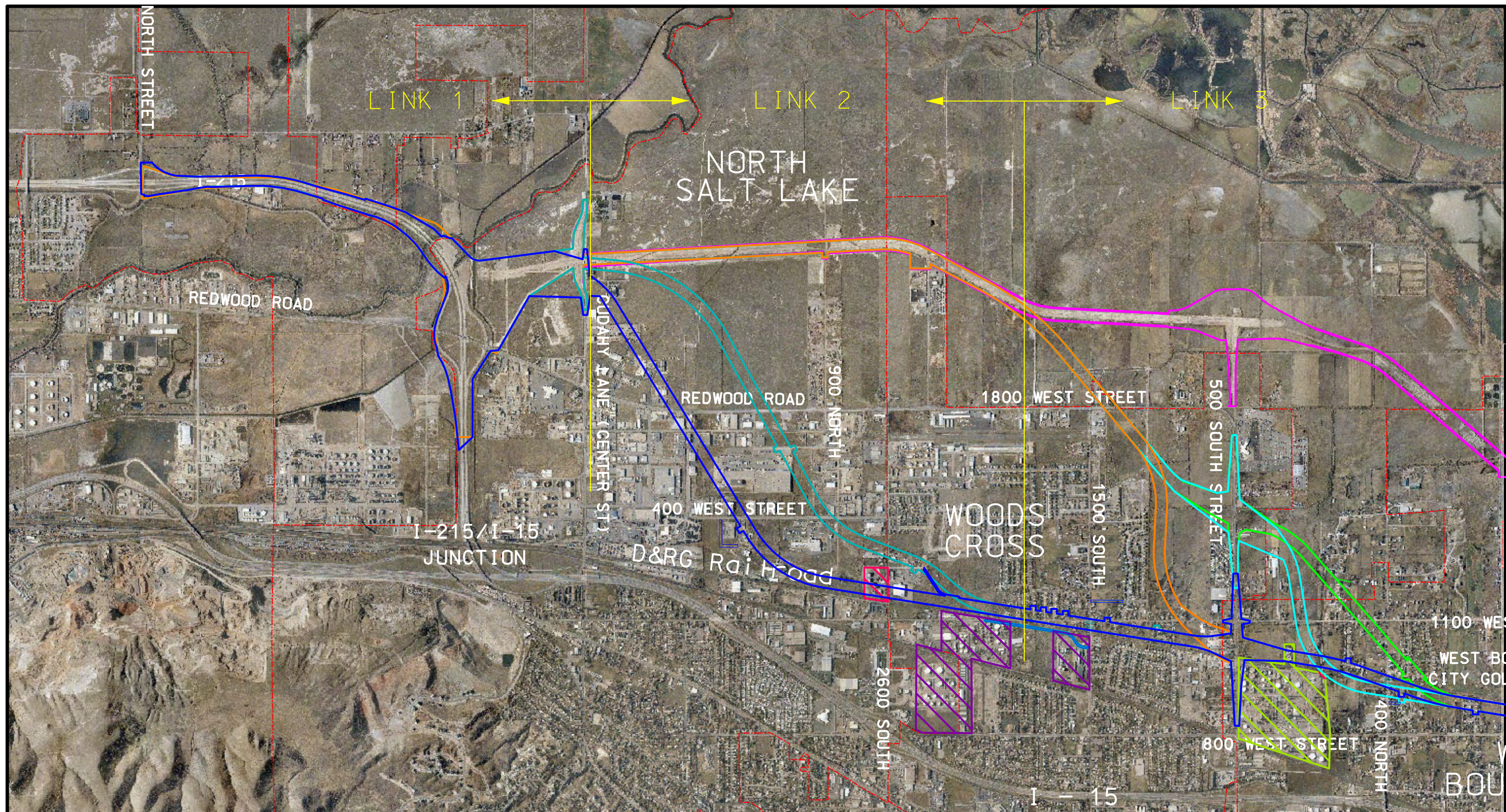
| Alt                  | Total<br>Excavation<br>Volume (m3) | Total<br>Excavation<br>Volume (yd3) | <b>Cost</b>        |
|----------------------|------------------------------------|-------------------------------------|--------------------|
| DRG1 - Link 2        | 25,109                             | 32,893                              | <b>\$1,249,947</b> |
| DRG 1, 2 - Link 2    | 3,378                              | 4,425                               | <b>\$168,166</b>   |
| DRG 1, 2 - Link 3    | 4,879                              | 6,391                               | <b>\$242,866</b>   |
| DRG 1, 2, 3 - Link 3 | 29,119                             | 38,146                              | <b>\$1,449,542</b> |
| DRG 4                | 0                                  | 0                                   | <b>\$0</b>         |
| DRG 5                | 0                                  | 0                                   | <b>\$0</b>         |
| ALT E                | 0                                  | 0                                   | <b>\$0</b>         |

Bountiful Sanitary Landfill Contract price:

| <b>Landfill Mod.</b>         |                       |
|------------------------------|-----------------------|
| Landfill Building Relocation | \$829,485.00          |
| Landfill Construction        | \$464,512.00          |
|                              | <b>\$1,293,997.00</b> |

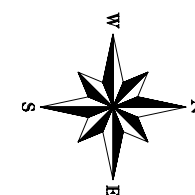
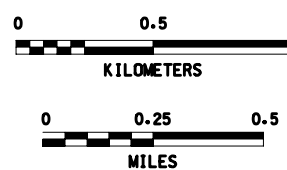
Landfill is impacted by ALT E only.





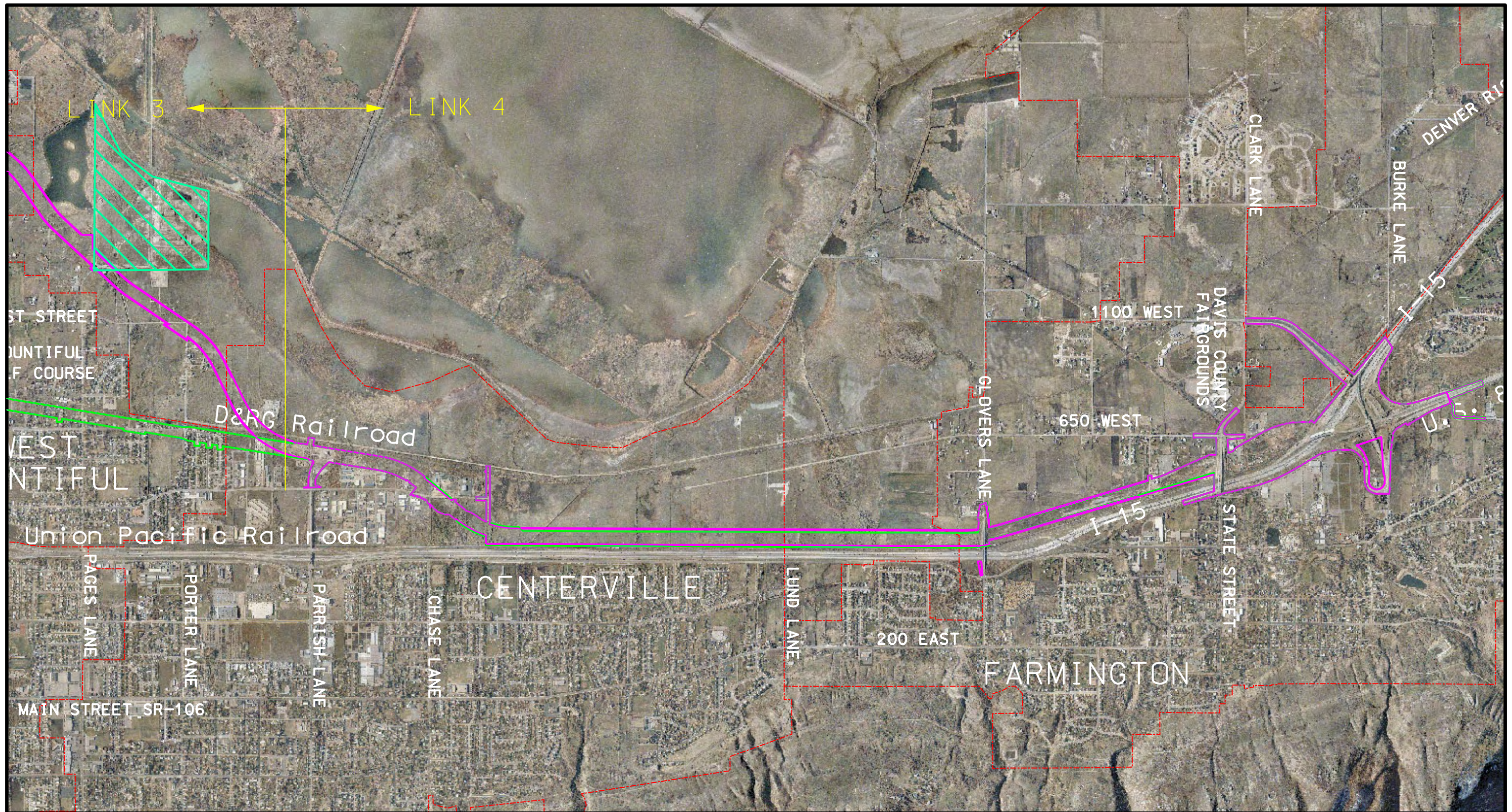
**LEGEND**

- |          |                         |
|----------|-------------------------|
| ∧ D&RG 1 | ∧ ALTERNATIVE E         |
| ∧ D&RG 2 | ∧ MUNICIPAL BOUNDARY    |
| ∧ D&RG 3 | ▨ KOCH ASPHALT          |
| ∧ D&RG 4 | ▨ SILVER EAGLE REFINERY |
| ∧ D&RG 5 | ▨ HOLY CORP. REFINERY   |



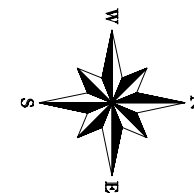
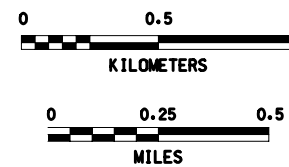
**ATTACHMENT 22  
FIGURE 1  
POTENTIALLY HAZARDOUS SITES**





#### LEGEND

- |        |                    |
|--------|--------------------|
| D&RG 1 | ALTERNATIVE E      |
| D&RG 2 | MUNICIPAL BOUNDARY |
| D&RG 3 | BOUNTIFUL LANDFILL |
| D&RG 4 |                    |
| D&RG 5 |                    |



ATTACHMENT 22  
FIGURE 2  
POTENTIALLY HAZARDOUS SITES



|                |                               |                 |     |             |          |
|----------------|-------------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS                   | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates            | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Utility Relocations Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                               | <b>No.</b>      |     |             |          |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

Costs include relocating sanitary sewer, overhead communications, gas lines, power lines, fiber optic lines, water lines, phone lines, etc.

Use contract price for Alt E.

#### **Contract Price for Alt E**

Costs do not include petroleum pipeline relocations

|                   |                    |
|-------------------|--------------------|
| North Interchange | \$2,347,330        |
| South Interchange | \$1,275,459        |
| Glovers Lane      | \$785,137          |
| 500 South         | \$1,632,089        |
| Option 1          | \$3,253,661        |
| <b>Total</b>      | <b>\$9,293,676</b> |

#### **Costs for D&RG Alts**

To determine costs for D&RG alts, 5 current UDOT projects in similarly developed areas were evaluated

| <b>UDOT Projects Evaluated</b>                    | <b>Total Cost</b> | <b>Utilities</b> | <b>Percentage<br/>of cost<br/>attributed to<br/>utilities</b> |
|---|-------------------|------------------|---|
| Extend Main Street from 5300 South to Vine Street | \$18,603,707      | \$1,690,000      | 9.1%  |
| State Street 7800 South to 6400 South             | \$14,360,200      | \$1,349,000      | 9.4%  |
| 36th Street Wall Avenue to Adams                  | \$4,099,571       | \$584,058        | 14.2%   |
| SR-71 12300 South Bangerter HWY to 700 East       | \$116,311,426     | \$14,000,000     | 12.0%   |
| Wall 30th and 31st                                | \$7,455,000       | \$1,300,000      | 17.4%   |

**To be conservative use 8%**

## APPENDIX D

### 62 to 95 m (204 to 312ft) RIGHT OF WAY COST ESTIMATES



|         |                    |          |    |      |           |
|---------|--------------------|----------|----|------|-----------|
| Project | Legacy SEIS        | Computed | TW | Date | 7/15/2004 |
| Subject | DRG Cost Estimates | Checked  |    | Date |           |
| Task    | Summary            | Sheet    |    | Of   |           |
| Job No. |                    | No.      |    |      |           |

#### Materials Subtotals

|       | Link 1  | Link 2  | Link 3  | Link 4  | Link 5  | Subtotal |
|-------|---------|---------|---------|---------|---------|----------|
| DRG1  | \$36.46 | \$34.54 | \$67.95 | \$36.67 | \$99.86 | \$275.49 |
| DRG2  | \$36.46 | \$31.57 | \$67.95 | \$36.67 | \$99.86 | \$272.52 |
| DRG3  | \$36.46 | \$10.37 | \$79.42 | \$36.67 | \$99.86 | \$262.78 |
| DRG4  | \$36.46 | \$10.37 | \$67.19 | \$36.67 | \$99.86 | \$250.55 |
| DRG5  | \$36.46 | \$10.37 | \$63.06 | \$36.67 | \$99.86 | \$246.42 |
| Alt E | \$36.46 | \$10.37 | \$34.79 | \$36.67 | \$99.86 | \$218.16 |

#### Totals (including ROW, Mitigation, and Contingencies)

|       | Link 1  | Link 2   | Link 3   | Link 4  | Link 5   | SubTotal | Total (subtotal less ROW reduction \$) |
|-------|---------|----------|----------|---------|----------|----------|--|
| DRG1  | \$66.63 | \$105.51 | \$192.96 | \$85.20 | \$162.91 | \$613.22 | \$612.39                               |
| DRG2  | \$66.63 | \$101.53 | \$192.96 | \$85.20 | \$162.91 | \$609.24 | \$608.29                               |
| DRG3  | \$66.63 | \$22.85  | \$196.51 | \$85.20 | \$162.91 | \$534.11 | \$533.11                               |
| DRG4  | \$66.63 | \$22.85  | \$179.81 | \$85.20 | \$162.91 | \$517.41 | \$516.30                               |
| DRG5  | \$66.63 | \$22.85  | \$177.97 | \$85.20 | \$162.91 | \$515.57 | \$514.56                               |
| Alt E | \$66.63 | \$22.85  | \$77.38  | \$85.20 | \$162.91 | \$414.98 | \$414.19                               |

#### Link Differences from Alt. E

##### Link 2

|       | cost     | diff. from Alt. E | % diff                        |
|-------|----------|-------------------|-------------------------------|
| DRG1  | \$105.51 | \$82.66           | 362%                          |
| DRG2  | \$101.53 | \$78.68           | 344%                          |
| DRG3  | \$22.85  | \$0.00            | 0% same as alignment as Alt E |
| DRG4  | \$22.85  | \$0.00            | 0% same as alignment as Alt E |
| DRG5  | \$22.85  | \$0.00            | 0% same as alignment as Alt E |
| Alt E | \$22.85  |                   |                               |

##### Link 3

|       | cost     | diff. from Alt. E | % diff |
|-------|----------|-------------------|--------|
| DRG1  | \$192.96 | \$115.58          | 149%   |
| DRG2  | \$192.96 | \$115.58          | 149%   |
| DRG3  | \$196.51 | \$119.13          | 154%   |
| DRG4  | \$179.81 | \$102.43          | 132%   |
| DRG5  | \$177.97 | \$100.59          | 130%   |
| Alt E | \$77.38  |                   |        |

#### Combining Links 2 and 3, for DRG 1 and DRG 2

|       | cost     | diff. from Alt. E | % diff |
|-------|----------|-------------------|--------|
| DRG1  | \$298.47 | \$198.24          | 198%   |
| DRG2  | \$294.49 | \$194.26          | 194%   |
| Alt E | \$100.23 | \$0.00            | 0%     |

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E Cost Estimate for Link 1 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$3,304,744  | \$3.31              |
| Asphalt Pavement (2)  | \$228,770    | \$0.23              |
| Trail Pavement (3)  | \$0          | \$0.00              |
| Trail Mulch (4)   | \$0          | \$0.00              |
| Earthwork (5)   | \$14,600,000 | \$14.60             |
| Barrier (6)   | \$980,982    | \$0.98              |
| Noise Walls (7)   | \$0          | \$0.00              |
| Retaining Walls (8)   | \$621,432    | \$0.62              |
| Structures (9)  | \$9,522,340  | \$9.52              |
| Striping (10)   | \$155,280    | \$0.16              |
| Fence (11)  | \$777,615    | \$0.78              |
| Drainage (12)   | \$964,696    | \$0.96              |
| Excavation (13)   | \$117,623    | \$0.12              |
| Demolition (14)   | \$315,963    | \$0.32              |
| Traffic Control (15)  | \$475,861    | \$0.48              |
| Landscaping (16)  | \$2,829,408  | \$2.83              |
| Lighting (17)   | \$157,823    | \$0.16              |
| Petroleum Pipelines Relocations (18)  | \$259,439    | \$0.26              |
| ATMS (19)   | \$1,140,936  | \$1.14              |
| Hazardous Waste Clean-up (Refineries) (22)  | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)   | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$36.46</b>      |
| ROW (20)  | \$7,252,216  | \$7.25              |
| Wetlands Mitigation (21)  | \$4,328,947  | \$4.33              |
|   |              |                     |
| Signing   | 1%           | \$0.36              |
| Utilities (23)  | 8%           | \$2.92              |
| Misc. Items   | 5%           | \$1.82              |
| Mobilization  | 7%           | \$2.55              |
| Contingencies   | 15%          | \$5.47              |
| Engineering   | 15%          | \$5.47              |
| <b>TOTAL</b>  |              | <b>\$66.63</b>      |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E without a Trail Cost<br>Estimate for Link 1 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$3,304,744  | \$3.31              |
| Asphalt Pavement (2)   | \$228,770    | \$0.23              |
| Earthwork (5)  | \$14,600,000 | \$14.60             |
| Barrier (6)  | \$980,982    | \$0.98              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$621,432    | \$0.62              |
| Structures (9)   | \$9,522,340  | \$9.52              |
| Striping (10)  | \$155,280    | \$0.16              |
| Fence (11)   | \$777,615    | \$0.78              |
| Drainage (12)  | \$964,696    | \$0.96              |
| Excavation (13)  | \$117,623    | \$0.12              |
| Demolition (14)  | \$315,963    | \$0.32              |
| Traffic Control (15)   | \$475,861    | \$0.48              |
| Landscaping (16)   | \$2,829,408  | \$2.83              |
| Lighting (17)  | \$157,823    | \$0.16              |
| Petroleum Pipelines Relocations (18)   | \$259,439    | \$0.26              |
| ATMS (19)  | \$1,958,849  | \$1.96              |
| Hazardous Waste Clean-up (Refineries) (22)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$37.28</b>      |
| ROW (20)   | \$7,252,216  | \$7.25              |
| Wetlands Mitigation (21)   | \$4,328,947  | \$4.33              |
|  |              |                     |
| Signing  | 1%           | \$0.37              |
| Utilities (23)   | 8%           | \$2.98              |
| Misc. Items  | 5%           | \$1.86              |
| Mobilization   | 7%           | \$2.61              |
| Contingencies  | 15%          | \$5.59              |
| Engineering  | 15%          | \$5.59              |
| <b>TOTAL</b>   |              | <b>\$67.87</b>      |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG1 Cost Estimate for Link 2 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$4,959,910  | \$4.96              |
| Asphalt Pavement (2)  | \$872,400    | \$0.87              |
| Trail Pavement (3)  | \$145,320    | \$0.15              |
| Trail Mulch (4)   | \$3,460.00   | \$0.00              |
| Earthwork (5)   | \$6,900,000  | \$6.90              |
| Barrier (6)   | \$464,419    | \$0.46              |
| Noise Walls (7)   | \$1,285,550  | \$1.29              |
| Retaining Walls (8)   | \$4,268,075  | \$4.27              |
| Structures (9)  | \$9,763,020  | \$9.76              |
| Striping (10)   | \$22,263     | \$0.03              |
| Fence (11)  | \$374,912    | \$0.38              |
| Drainage (12)   | \$2,029,571  | \$2.03              |
| Excavation (13)   | \$155,840    | \$0.16              |
| Demolition (14)   | \$65,438     | \$0.07              |
| Traffic Control (15)  | \$51,808     | \$0.05              |
| Landscaping (16)  | \$825,224    | \$0.83              |
| Lighting (17)   | \$0          | \$0.00              |
| Petroleum Pipelines Relocations (18)                          | \$921,726    | \$0.92              |
| ATMS (19)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$1,418,113  | \$1.42              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$34.54</b>      |
| ROW (20)  | \$52,100,646 | \$52.10             |
| Wetlands Mitigation (21)                                      | \$1,250,000  | \$1.25              |
|   |              |                     |
| Signing   | 1%           | \$0.35              |
| Utilities (23)  | 8%           | \$2.76              |
| Misc. Items   | 5%           | \$1.73              |
| Mobilization  | 7%           | \$2.42              |
| Contingencies   | 15%          | \$5.18              |
| Engineering   | 15%          | \$5.18              |
| <b>TOTAL</b>  |              | <b>\$105.51</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |



| Denver & Rio Grande Alternative DRG1 without a Trail Cost Estimate for Link 2 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$4,959,910  | \$4.96              |
| Asphalt Pavement (2)  | \$872,400    | \$0.87              |
| Earthwork (5)   | \$6,900,000  | \$6.90              |
| Barrier (6)   | \$464,419    | \$0.46              |
| Noise Walls (7)   | \$1,285,550  | \$1.29              |
| Retaining Walls (8)   | \$4,268,075  | \$4.27              |
| Structures (9)  | \$9,763,020  | \$9.76              |
| Striping (10)   | \$22,263     | \$0.02              |
| Fence (11)  | \$265,773    | \$0.27              |
| Drainage (12)   | \$2,029,571  | \$2.03              |
| Excavation (13)   | \$155,840    | \$0.16              |
| Demolition (14)   | \$65,438     | \$0.07              |
| Traffic Control (15)  | \$51,808     | \$0.05              |
| Landscaping (16)  | \$825,224    | \$0.83              |
| Lighting (17)   | \$0          | \$0.00              |
| Petroleum Pipelines Relocations (18)  | \$921,726    | \$0.92              |
| ATMS (19)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$1,418,113  | \$1.42              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$34.27</b>      |
| ROW (20)  | \$52,100,646 | \$52.10             |
| Wetlands Mitigation (21)  | \$1,250,000  | \$1.25              |
|   |              |                     |
| Signing   | 1%           | \$0.34              |
| Utilities (23)  | 8%           | \$2.74              |
| Misc. Items   | 5%           | \$1.71              |
| Mobilization  | 7%           | \$2.40              |
| Contingencies   | 15%          | \$5.14              |
| Engineering   | 15%          | \$5.14              |
| <b>TOTAL</b>  |              | <b>\$105.10</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG2 Cost Estimate for Link 2 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$4,959,910  | \$4.96              |
| Asphalt Pavement (2)  | \$577,800    | \$0.58              |
| Trail Pavement (3)  | \$145,320    | \$0.15              |
| Trail Mulch (4)   | \$3,460.00   | \$0.00              |
| Earthwork (5)   | \$5,400,000  | \$5.40              |
| Barrier (6)   | \$663,869    | \$0.66              |
| Noise Walls (7)   | \$1,887,900  | \$1.89              |
| Retaining Walls (8)   | \$4,432,925  | \$4.44              |
| Structures (9)  | \$9,763,020  | \$9.76              |
| Striping (10)   | \$22,263     | \$0.03              |
| Fence (11)  | \$341,277    | \$0.35              |
| Drainage (12)   | \$1,860,027  | \$1.86              |
| Excavation (13)   | \$105,204    | \$0.11              |
| Demolition (14)   | \$48,972     | \$0.05              |
| Traffic Control (15)  | \$51,808     | \$0.05              |
| Landscaping (16)  | \$825,224    | \$0.83              |
| Lighting (17)   | \$0          | \$0.00              |
| Petroleum Pipelines Relocations (18)                          | \$291,382    | \$0.29              |
| ATMS (19)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$168,166    | \$0.17              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$31.57</b>      |
| ROW (20)  | \$51,359,707 | \$51.36             |
| Wetlands Mitigation (21)                                      | \$2,500,000  | \$2.50              |
|   |              |                     |
| Signing   | 1%           | \$0.32              |
| Utilities (23)  | 8%           | \$2.53              |
| Misc. Items   | 5%           | \$1.58              |
| Mobilization  | 7%           | \$2.21              |
| Contingencies   | 15%          | \$4.74              |
| Engineering   | 15%          | \$4.74              |
| <b>TOTAL</b>  |              | <b>\$101.53</b>     |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG2 without a Trail Cost Estimate for Link 2 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$4,959,910  | \$4.96              |
| Asphalt Pavement (2)  | \$577,800    | \$0.58              |
| Earthwork (5)   | \$5,400,000  | \$5.40              |
| Barrier (6)   | \$663,869    | \$0.66              |
| Noise Walls (7)   | \$1,887,900  | \$1.89              |
| Retaining Walls (8)   | \$4,432,925  | \$4.43              |
| Structures (9)  | \$9,763,020  | \$9.76              |
| Striping (10)   | \$22,263     | \$0.02              |
| Fence (11)  | \$249,264    | \$0.25              |
| Drainage (12)   | \$1,860,027  | \$1.86              |
| Excavation (13)   | \$105,204    | \$0.11              |
| Demolition (14)   | \$48,972     | \$0.05              |
| Traffic Control (15)  | \$51,808     | \$0.05              |
| Landscaping (16)  | \$825,224    | \$0.83              |
| Lighting (17)   | \$0          | \$0.00              |
| Petroleum Pipelines Relocations (18)  | \$291,382    | \$0.29              |
| ATMS (19)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$168,166    | \$0.17              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$31.31</b>      |
| ROW (20)  | \$51,359,707 | \$51.36             |
| Wetlands Mitigation (21)  | \$2,500,000  | \$2.50              |
|   |              |                     |
| Signing   | 1%           | \$0.31              |
| Utilities (23)  | 8%           | \$2.50              |
| Misc. Items   | 5%           | \$1.57              |
| Mobilization  | 7%           | \$2.19              |
| Contingencies   | 15%          | \$4.70              |
| Engineering   | 15%          | \$4.70              |
| <b>TOTAL</b>  |              | <b>\$101.14</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG3, 4, 5 and Alternative E Cost Estimate for Link 2 |             |                     |
|---|-------------|---------------------|
| ITEM  | COST        |                     |
|   | UNIT        | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$3,807,376 | \$3.81              |
| Asphalt Pavement (2)  | \$21,000    | \$0.02              |
| Trail Pavement (3)  | \$111,552   | \$0.11              |
| Trail Mulch (4)   | \$2,656.00  | \$0.00              |
| Earthwork (5)   | \$3,300,000 | \$3.30              |
| Barrier (6)   | \$399,482   | \$0.40              |
| Noise Walls (7)   | \$0         | \$0.00              |
| Retaining Walls (8)   | \$510,825   | \$0.52              |
| Structures (9)  | \$0         | \$0.00              |
| Striping (10)   | \$14,940    | \$0.02              |
| Fence (11)  | \$261,353   | \$0.27              |
| Drainage (12)   | \$1,241,632 | \$1.24              |
| Excavation (13)   | \$3,675     | \$0.00              |
| Demolition (14)   | \$13,914    | \$0.01              |
| Traffic Control (15)  | \$30,100    | \$0.03              |
| Landscaping (16)  | \$623,281   | \$0.62              |
| Lighting (17)   | \$0         | \$0.00              |
| Petroleum Pipelines Relocations (18)  | \$0         | \$0.00              |
| ATMS (19)   | \$0         | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)  | \$0         | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)   | \$0         | \$0.00              |
| <b>SUBTOTAL</b>   |             | <b>\$10.37</b>      |
| ROW (20)  | \$5,769,824 | \$5.77              |
| Wetlands Mitigation (21)  | \$1,425,439 | \$1.43              |
|   |             |                     |
| Signing   | 1%          | \$0.10              |
| Utilities (23)  | 8%          | \$0.83              |
| Misc. Items   | 5%          | \$0.52              |
| Mobilization  | 7%          | \$0.73              |
| Contingencies   | 15%         | \$1.56              |
| Engineering   | 15%         | \$1.56              |
| <b>TOTAL</b>  |             | <b>\$22.85</b>      |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |



| Denver & Rio Grande Alternative DRG3, 4, 5 and Alternative E without a Trail Cost Estimate<br>for Link 2 |             |                     |
|--|-------------|---------------------|
| ITEM   | COST        |                     |
|  | UNIT        | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$3,807,376 | \$3.81              |
| Asphalt Pavement (2)   | \$21,000    | \$0.02              |
| Earthwork (5)  | \$3,300,000 | \$3.30              |
| Barrier (6)  | \$399,482   | \$0.40              |
| Noise Walls (7)  | \$0         | \$0.00              |
| Retaining Walls (8)  | \$510,825   | \$0.51              |
| Structures (9)   | \$0         | \$0.00              |
| Striping (10)  | \$14,940    | \$0.02              |
| Fence (11)   | \$192,763   | \$0.19              |
| Drainage (12)  | \$1,241,632 | \$1.24              |
| Excavation (13)  | \$3,675     | \$0.00              |
| Demolition (14)  | \$13,914    | \$0.01              |
| Traffic Control (15)   | \$30,100    | \$0.03              |
| Landscaping (16)   | \$623,281   | \$0.62              |
| Lighting (17)  | \$0         | \$0.00              |
| Petroleum Pipelines Relocations (18)   | \$0         | \$0.00              |
| ATMS (19)  | \$0         | \$0.00              |
| Hazardous Waste Clean-up (Refineries) (22)   | \$0         | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0         | \$0.00              |
| <b>SUBTOTAL</b>  |             | <b>\$10.16</b>      |
| ROW (20)   | \$5,769,824 | \$5.77              |
| Wetlands Mitigation (21)   | \$1,425,439 | \$1.43              |
|  |             |                     |
| Signing  | 1%          | \$0.10              |
| Utilities (23)   | 8%          | \$0.81              |
| Misc. Items  | 5%          | \$0.51              |
| Mobilization   | 7%          | \$0.71              |
| Contingencies  | 15%         | \$1.52              |
| Engineering  | 15%         | \$1.52              |
| <b>TOTAL</b>   |             | <b>\$22.54</b>      |

**Notes:**

- |   |  |
|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG1, 2 Cost Estimate for Link 3 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$9,851,084  | \$9.86              |
| Asphalt Pavement (2)   | \$1,332,300  | \$1.33              |
| Trail Pavement (3)   | \$189,000    | \$0.19              |
| Trail Mulch (4)  | \$4,500.00   | \$0.00              |
| Earthwork (5)  | \$10,500,000 | \$10.50             |
| Barrier (6)  | \$767,200    | \$0.77              |
| Noise Walls (7)  | \$2,334,500  | \$2.33              |
| Retaining Walls (8)  | \$7,518,175  | \$7.52              |
| Structures (9)   | \$23,797,361 | \$23.80             |
| Striping (10)  | \$37,313     | \$0.04              |
| Fence (11)   | \$535,529    | \$0.54              |
| Drainage (12)  | \$3,738,091  | \$3.74              |
| Excavation (13)  | \$219,977    | \$0.22              |
| Demolition (14)  | \$186,115    | \$0.19              |
| Traffic Control (15)   | \$67,380     | \$0.07              |
| Landscaping (16)   | \$1,073,268  | \$1.07              |
| Lighting (17)  | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                             | \$3,360,227  | \$3.36              |
| ATMS (19)  | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                       | \$1,692,407  | \$1.69              |
| Hazardous Waste Clean-up (Landfills) (22)                        | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$67.95</b>      |
| ROW (20)   | \$86,518,518 | \$86.52             |
| Wetlands Mitigation (21)   | \$3,837,719  | \$3.84              |
|  |              |                     |
| Signing  | 1%           | \$0.68              |
| Utilities (23)   | 8%           | \$5.44              |
| Misc. Items  | 5%           | \$3.40              |
| Mobilization   | 7%           | \$4.76              |
| Contingencies  | 15%          | \$10.19             |
| Engineering  | 15%          | \$10.19             |
| <b>TOTAL</b>   |              | <b>\$192.96</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG1, 2 without a Trail Cost Estimate for Link 3 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$9,851,084  | \$9.86              |
| Asphalt Pavement (2)   | \$1,332,300  | \$1.33              |
| Earthwork (5)  | \$10,500,000 | \$10.50             |
| Barrier (6)  | \$767,200    | \$0.77              |
| Noise Walls (7)  | \$2,334,500  | \$2.33              |
| Retaining Walls (8)  | \$7,518,175  | \$7.52              |
| Structures (9)   | \$23,797,361 | \$23.80             |
| Striping (10)  | \$37,313     | \$0.04              |
| Fence (11)   | \$381,466    | \$0.38              |
| Drainage (12)  | \$3,738,091  | \$3.74              |
| Excavation (13)  | \$219,977    | \$0.22              |
| Demolition (14)  | \$186,115    | \$0.19              |
| Traffic Control (15)   | \$67,380     | \$0.07              |
| Landscaping (16)   | \$1,073,268  | \$1.07              |
| Lighting (17)  | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)   | \$3,360,227  | \$3.36              |
| ATMS (19)  | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                       | \$1,692,407  | \$1.69              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$67.59</b>      |
| ROW (20)   | \$86,518,518 | \$86.52             |
| Wetlands Mitigation (21)   | \$3,837,719  | \$3.84              |
|  |              |                     |
| Signing  | 1%           | \$0.68              |
| Utilities (23)   | 8%           | \$5.41              |
| Misc. Items  | 5%           | \$3.38              |
| Mobilization   | 7%           | \$4.73              |
| Contingencies  | 15%          | \$10.14             |
| Engineering  | 15%          | \$10.14             |
| <b>TOTAL</b>   |              | <b>\$192.42</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG3 Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,565,550 | \$11.57             |
| Asphalt Pavement (2)  | \$1,069,680  | \$1.07              |
| Trail Pavement (3)  | \$239,232    | \$0.24              |
| Trail Mulch (4)   | \$5,696.00   | \$0.01              |
| Earthwork (5)   | \$12,900,000 | \$12.90             |
| Barrier (6)   | \$974,030    | \$0.97              |
| Noise Walls (7)   | \$2,103,500  | \$2.10              |
| Retaining Walls (8)   | \$9,686,250  | \$9.69              |
| Structures (9)  | \$29,492,456 | \$29.49             |
| Striping (10)   | \$45,440     | \$0.05              |
| Fence (11)  | \$643,072    | \$0.65              |
| Drainage (12)   | \$4,074,832  | \$4.07              |
| Excavation (13)   | \$167,825    | \$0.17              |
| Demolition (14)   | \$162,873    | \$0.16              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                          | \$2,720,517  | \$2.72              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$1,449,542  | \$1.45              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$79.42</b>      |
| ROW (20)  | \$72,108,401 | \$72.11             |
| Wetlands Mitigation (21)                                      | \$4,473,684  | \$4.47              |
|   |              |                     |
| Signing   | 1%           | \$0.79              |
| Utilities (23)  | 8%           | \$6.35              |
| Misc. Items   | 5%           | \$3.97              |
| Mobilization  | 7%           | \$5.56              |
| Contingencies   | 15%          | \$11.91             |
| Engineering   | 15%          | \$11.91             |
| <b>TOTAL</b>  |              | <b>\$196.51</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |



| Denver & Rio Grande Alternative DRG3 without a Trail Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,565,550 | \$11.57             |
| Asphalt Pavement (2)  | \$1,069,680  | \$1.07              |
| Earthwork (5)   | \$12,900,000 | \$12.90             |
| Barrier (6)   | \$974,030    | \$0.97              |
| Noise Walls (7)   | \$2,103,500  | \$2.10              |
| Retaining Walls (8)   | \$9,686,250  | \$9.69              |
| Structures (9)  | \$29,492,456 | \$29.49             |
| Striping (10)   | \$45,440     | \$0.05              |
| Fence (11)  | \$469,626    | \$0.47              |
| Drainage (12)   | \$4,074,832  | \$4.07              |
| Excavation (13)   | \$167,825    | \$0.17              |
| Demolition (14)   | \$162,873    | \$0.16              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)  | \$2,720,517  | \$2.72              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$1,449,542  | \$1.45              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$78.99</b>      |
| ROW (20)  | \$72,108,401 | \$72.11             |
| Wetlands Mitigation (21)  | \$4,473,684  | \$4.47              |
|   |              |                     |
| Signing   | 1%           | \$0.79              |
| Utilities (23)  | 8%           | \$6.32              |
| Misc. Items   | 5%           | \$3.95              |
| Mobilization  | 7%           | \$5.53              |
| Contingencies   | 15%          | \$11.85             |
| Engineering   | 15%          | \$11.85             |
| <b>TOTAL</b>  |              | <b>\$195.86</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG4 Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,324,722 | \$11.33             |
| Asphalt Pavement (2)  | \$1,217,475  | \$1.22              |
| Trail Pavement (3)  | \$232,176    | \$0.23              |
| Trail Mulch (4)   | \$5,528.00   | \$0.01              |
| Earthwork (5)   | \$12,300,000 | \$12.30             |
| Barrier (6)   | \$893,054    | \$0.89              |
| Noise Walls (7)   | \$1,962,800  | \$1.96              |
| Retaining Walls (8)   | \$8,326,500  | \$8.33              |
| Structures (9)  | \$20,949,813 | \$20.95             |
| Striping (10)   | \$44,495     | \$0.05              |
| Fence (11)  | \$610,243    | \$0.62              |
| Drainage (12)   | \$3,800,255  | \$3.80              |
| Excavation (13)   | \$164,150    | \$0.16              |
| Demolition (14)   | \$152,783    | \$0.15              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                          | \$3,072,960  | \$3.07              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$67.19</b>      |
| ROW (20)  | \$74,108,401 | \$74.11             |
| Wetlands Mitigation (21)                                      | \$4,254,386  | \$4.25              |
|   |              |                     |
| Signing   | 1%           | \$0.67              |
| Utilities (23)  | 8%           | \$5.37              |
| Misc. Items   | 5%           | \$3.36              |
| Mobilization  | 7%           | \$4.70              |
| Contingencies   | 15%          | \$10.08             |
| Engineering   | 15%          | \$10.08             |
| <b>TOTAL</b>  |              | <b>\$179.81</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG4 without a Trail Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,324,722 | \$11.33             |
| Asphalt Pavement (2)  | \$1,217,475  | \$1.22              |
| Earthwork (5)   | \$12,300,000 | \$12.30             |
| Barrier (6)   | \$893,054    | \$0.89              |
| Noise Walls (7)   | \$1,962,800  | \$1.96              |
| Retaining Walls (8)   | \$8,326,500  | \$8.33              |
| Structures (9)  | \$20,949,813 | \$20.95             |
| Striping (10)   | \$44,495     | \$0.04              |
| Fence (11)  | \$445,324    | \$0.45              |
| Drainage (12)   | \$3,800,255  | \$3.80              |
| Excavation (13)   | \$164,150    | \$0.16              |
| Demolition (14)   | \$152,783    | \$0.15              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)  | \$3,072,960  | \$3.07              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$66.76</b>      |
| ROW (20)  | \$74,108,401 | \$74.11             |
| Wetlands Mitigation (21)  | \$4,254,386  | \$4.25              |
| Signing   | 1%           | \$0.67              |
| Utilities (23)  | 8%           | \$5.34              |
| Misc. Items   | 5%           | \$3.34              |
| Mobilization  | 7%           | \$4.67              |
| Contingencies   | 15%          | \$10.01             |
| Engineering   | 15%          | \$10.01             |
| <b>TOTAL</b>  |              | <b>\$179.18</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG5 Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,089,628 | \$11.09             |
| Asphalt Pavement (2)  | \$1,323,900  | \$1.32              |
| Trail Pavement (3)  | \$225,288    | \$0.23              |
| Trail Mulch (4)   | \$5,364.00   | \$0.01              |
| Earthwork (5)   | \$11,400,000 | \$11.40             |
| Barrier (6)   | \$814,005    | \$0.81              |
| Noise Walls (7)   | \$2,156,000  | \$2.16              |
| Retaining Walls (8)   | \$6,823,950  | \$6.83              |
| Structures (9)  | \$19,526,040 | \$19.53             |
| Striping (10)   | \$43,573     | \$0.05              |
| Fence (11)  | \$613,737    | \$0.62              |
| Drainage (12)   | \$3,928,849  | \$3.93              |
| Excavation (13)   | \$182,350    | \$0.18              |
| Demolition (14)   | \$164,561    | \$0.16              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                          | \$2,642,517  | \$2.64              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                    | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$63.06</b>      |
| ROW (20)  | \$79,108,401 | \$79.11             |
| Wetlands Mitigation (21)                                      | \$3,640,351  | \$3.64              |
|   |              |                     |
| Signing   | 1%           | \$0.63              |
| Utilities (23)  | 8%           | \$5.05              |
| Misc. Items   | 5%           | \$3.15              |
| Mobilization  | 7%           | \$4.41              |
| Contingencies   | 15%          | \$9.46              |
| Engineering   | 15%          | \$9.46              |
| <b>TOTAL</b>  |              | <b>\$177.97</b>     |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |



| Denver & Rio Grande Alternative DRG5 without a Trail Cost Estimate for Link 3 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$11,089,628 | \$11.09             |
| Asphalt Pavement (2)  | \$1,323,900  | \$1.32              |
| Earthwork (5)   | \$11,400,000 | \$11.40             |
| Barrier (6)   | \$814,005    | \$0.81              |
| Noise Walls (7)   | \$2,156,000  | \$2.16              |
| Retaining Walls (8)   | \$6,823,950  | \$6.82              |
| Structures (9)  | \$19,526,040 | \$19.53             |
| Striping (10)   | \$43,573     | \$0.04              |
| Fence (11)  | \$442,159    | \$0.44              |
| Drainage (12)   | \$3,928,849  | \$3.93              |
| Excavation (13)   | \$182,350    | \$0.18              |
| Demolition (14)   | \$164,561    | \$0.16              |
| Traffic Control (15)  | \$81,312     | \$0.08              |
| Landscaping (16)  | \$1,295,184  | \$1.30              |
| Lighting (17)   | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)  | \$2,642,517  | \$2.64              |
| ATMS (19)   | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                    | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                                     | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$62.64</b>      |
| ROW (20)  | \$79,108,401 | \$79.11             |
| Wetlands Mitigation (21)  | \$3,640,351  | \$3.64              |
|   |              |                     |
| Signing   | 1%           | \$0.63              |
| Utilities (23)  | 8%           | \$5.01              |
| Misc. Items   | 5%           | \$3.13              |
| Mobilization  | 7%           | \$4.38              |
| Contingencies   | 15%          | \$9.40              |
| Engineering   | 15%          | \$9.40              |
| <b>TOTAL</b>  |              | <b>\$177.34</b>     |

**Notes:**

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|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative E Cost Estimate for Link 3 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)                                      | \$11,267,382 | \$11.27             |
| Asphalt Pavement (2)                                       | \$2,064,075  | \$2.06              |
| Trail Pavement (3)   | \$230,496    | \$0.23              |
| Trail Mulch (4)  | \$5,488.00   | \$0.01              |
| Earthwork (5)  | \$7,600,000  | \$7.60              |
| Barrier (6)  | \$670,477    | \$0.67              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$735,000    | \$0.74              |
| Structures (9)   | \$5,039,296  | \$5.04              |
| Striping (10)  | \$40,070     | \$0.05              |
| Fence (11)   | \$587,215    | \$0.59              |
| Drainage (12)  | \$2,541,122  | \$2.54              |
| Excavation (13)  | \$40,900     | \$0.04              |
| Demolition (14)  | \$43,064     | \$0.04              |
| Traffic Control (15)                                       | \$62,548     | \$0.06              |
| Landscaping (16)   | \$1,295,184  | \$1.30              |
| Lighting (17)  | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                       | \$530,870    | \$0.53              |
| ATMS (19)  | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                 | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                  | \$1,293,997  | \$1.29              |
| <b>SUBTOTAL</b>  |              | <b>\$34.79</b>      |
| ROW (20)   | \$19,798,401 | \$19.80             |
| Wetlands Mitigation (21)                                   | \$5,043,860  | \$5.04              |
|  |              |                     |
| Signing  | 1%           | \$0.35              |
| Utilities (23)   | 8%           | \$2.78              |
| Misc. Items  | 5%           | \$1.74              |
| Mobilization   | 7%           | \$2.44              |
| Contingencies  | 15%          | \$5.22              |
| Engineering  | 15%          | \$5.22              |
| <b>TOTAL</b>   |              | <b>\$77.38</b>      |

**Notes:**

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|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative E without a Trail Cost Estimate for Link 3 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$11,267,382 | \$11.27             |
| Asphalt Pavement (2)   | \$2,064,075  | \$2.06              |
| Earthwork (5)  | \$7,600,000  | \$7.60              |
| Barrier (6)  | \$670,477    | \$0.67              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$735,000    | \$0.74              |
| Structures (9)   | \$5,039,296  | \$5.04              |
| Striping (10)  | \$40,070     | \$0.04              |
| Fence (11)   | \$419,411    | \$0.42              |
| Drainage (12)  | \$2,541,122  | \$2.54              |
| Excavation (13)  | \$40,900     | \$0.04              |
| Demolition (14)  | \$43,064     | \$0.04              |
| Traffic Control (15)   | \$62,548     | \$0.06              |
| Landscaping (16)   | \$1,295,184  | \$1.30              |
| Lighting (17)  | \$129,289    | \$0.13              |
| Petroleum Pipelines Relocations (18)                                       | \$530,870    | \$0.53              |
| ATMS (19)  | \$598,142    | \$0.60              |
| Hazardous Waste Clean-up (Refineries) (22)                                 | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)                                  | \$1,293,997  | \$1.29              |
| <b>SUBTOTAL</b>  |              | <b>\$34.37</b>      |
| ROW (20)   | \$19,798,401 | \$19.80             |
| Wetlands Mitigation (21)   | \$5,043,860  | \$5.04              |
|  |              |                     |
| Signing  | 1%           | \$0.34              |
| Utilities (23)   | 8%           | \$2.75              |
| Misc. Items  | 5%           | \$1.72              |
| Mobilization   | 7%           | \$2.41              |
| Contingencies  | 15%          | \$5.16              |
| Engineering  | 15%          | \$5.16              |
| <b>TOTAL</b>   |              | <b>\$76.75</b>      |

**Notes:**

- |   |  |
|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E Cost Estimate for Link 4 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$10,866,002 | \$10.87             |
| Asphalt Pavement (2)  | \$540,750    | \$0.54              |
| Trail Pavement (3)  | \$218,736    | \$0.22              |
| Trail Mulch (4)   | \$5,208.00   | \$0.01              |
| Earthwork (5)   | \$7,700,000  | \$7.70              |
| Barrier (6)   | \$675,214    | \$0.68              |
| Noise Walls (7)   | \$0          | \$0.00              |
| Retaining Walls (8)   | \$1,050,000  | \$1.05              |
| Structures (9)  | \$6,712,076  | \$6.71              |
| Striping (10)   | \$39,895     | \$0.04              |
| Fence (11)  | \$568,525    | \$0.57              |
| Drainage (12)   | \$3,656,376  | \$3.66              |
| Excavation (13)   | \$90,984     | \$0.09              |
| Demolition (14)   | \$28,611     | \$0.03              |
| Traffic Control (15)  | \$59,499     | \$0.06              |
| Landscaping (16)  | \$1,232,065  | \$1.23              |
| Lighting (17)   | \$128,294    | \$0.13              |
| Petroleum Pipelines Relocations (18)  | \$1,893,905  | \$1.89              |
| ATMS (19)   | \$1,202,006  | \$1.20              |
| Hazardous Waste Clean-up (Refineries) (22)  | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)   | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$36.67</b>      |
| ROW (20)  | \$21,867,558 | \$21.87             |
| Wetlands Mitigation (21)  | \$7,960,526  | \$7.96              |
|   |              |                     |
| Signing   | 1%           | \$0.37              |
| Utilities (23)  | 8%           | \$2.93              |
| Misc. Items   | 5%           | \$1.83              |
| Mobilization  | 7%           | \$2.57              |
| Contingencies   | 15%          | \$5.50              |
| Engineering   | 15%          | \$5.50              |
| <b>TOTAL</b>  |              | <b>\$85.20</b>      |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |



| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E without a Trail Cost<br>Estimate for Link 4 |                     |                     |
|--|---------------------|---------------------|
| ITEM   | COST                |                     |
|  | UNIT                | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$10,866,002        | \$10.87             |
| Asphalt Pavement (2)   | \$540,750           | \$0.54              |
| Earthwork (5)  | \$7,700,000         | \$7.70              |
| Barrier (6)  | \$675,214           | \$0.68              |
| Noise Walls (7)  | \$0                 | \$0.00              |
| Retaining Walls (8)  | \$1,050,000         | \$1.05              |
| Structures (9)   | \$6,712,076         | \$6.71              |
| Striping (10)  | \$39,895            | \$0.04              |
| Fence (11)   | \$436,740           | \$0.44              |
| Drainage (12)  | \$3,656,376         | \$3.66              |
| Excavation (13)  | \$90,984            | \$0.09              |
| Demolition (14)  | \$28,611            | \$0.03              |
| Traffic Control (15)   | \$59,499            | \$0.06              |
| Landscaping (16)   | \$1,232,065         | \$1.23              |
| Lighting (17)  | \$128,294           | \$0.13              |
| Petroleum Pipelines Relocations (18)   | \$1,893,905         | \$1.89              |
| ATMS (19)  | \$1,202,006         | \$1.20              |
| Hazardous Waste Clean-up (Refineries) (22)   | \$0                 | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0                 | \$0.00              |
| <b>SUBTOTAL</b>  |                     | <b>\$36.32</b>      |
| <b>ROW (20)</b>  | <b>\$21,867,558</b> | <b>\$21.87</b>      |
| Wetlands Mitigation (21)   | \$7,960,526         | \$7.96              |
| Signing  | 1%                  | \$0.36              |
| Utilities (23)   | 8%                  | \$2.91              |
| Misc. Items  | 5%                  | \$1.82              |
| Mobilization   | 7%                  | \$2.54              |
| Contingencies  | 15%                 | \$5.45              |
| Engineering  | 15%                 | \$5.45              |
| <b>TOTAL</b>   |                     | <b>\$84.67</b>      |

**Notes:**

- |   |  |
|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E Cost Estimate for Link 5 |              |                     |
|---|--------------|---------------------|
| ITEM  | COST         |                     |
|   | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)   | \$8,050,775  | \$8.06              |
| Asphalt Pavement (2)  | \$2,582,296  | \$2.58              |
| Trail Pavement (3)  | \$0          | \$0.00              |
| Trail Mulch (4)   | \$0          | \$0.00              |
| Earthwork (5)   | \$18,800,000 | \$18.80             |
| Barrier (6)   | \$1,327,066  | \$1.33              |
| Noise Walls (7)   | \$0          | \$0.00              |
| Retaining Walls (8)   | \$12,440,356 | \$12.44             |
| Structures (9)  | \$45,585,413 | \$45.59             |
| Striping (10)   | \$412,752    | \$0.41              |
| Fence (11)  | \$606,851    | \$0.61              |
| Drainage (12)   | \$2,798,256  | \$2.80              |
| Excavation (13)   | \$321,962    | \$0.32              |
| Demolition (14)   | \$1,065,007  | \$1.07              |
| Traffic Control (15)  | \$1,426,322  | \$1.43              |
| Landscaping (16)  | \$2,078,752  | \$2.08              |
| Lighting (17)   | \$1,214,615  | \$1.21              |
| Petroleum Pipelines Relocations (18)  | \$0          | \$0.00              |
| ATMS (19)   | \$1,140,936  | \$1.14              |
| Hazardous Waste Clean-up (Refineries) (22)  | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)   | \$0          | \$0.00              |
| <b>SUBTOTAL</b>   |              | <b>\$99.86</b>      |
| ROW (20)  | \$9,002,001  | \$9.00              |
| Wetlands Mitigation (21)  | \$3,114,035  | \$3.11              |
|   |              |                     |
| Signing   | 1%           | \$1.00              |
| Utilities (23)  | 8%           | \$7.99              |
| Misc. Items   | 5%           | \$4.99              |
| Mobilization  | 7%           | \$6.99              |
| Contingencies   | 15%          | \$14.98             |
| Engineering   | 15%          | \$14.98             |
| <b>TOTAL</b>  |              | <b>\$162.91</b>     |

**Notes:**

- |   |   |
|---|---|
| (1) See attachment 1.                                     | (13) See attachment 13 and figure.              |
| (2) See attachment 2 and figure.                          | (14) See attachment 14 and attachment 2 figure. |
| (3) See attachment 3.                                     | (15) See attachment 15.                         |
| (4) See attachment 4.                                     | (16) See attachment 16.                         |
| (5) See attachment 5 and figure.                          | (17) See attachment 17.                         |
| (6) See attachment 6 and figure and attachment 9 figures. | (18) See attachment 18 and figure.              |
| (7) See attachment 7 and figure.                          | (19) See attachment 19.                         |
| (8) See attachment 8 and figure.                          | (20) See attachment 20 and figure.              |
| (9) See attachment 9 and figure.                          | (21) See attachment 21.                         |
| (10) See attachment 10.                                   | (22) See attachment 22 and figure.              |
| (11) See attachment 11 and figure.                        | (23) See attachment 23.                         |
| (12) See attachment 12 and figure.                        |   |

| Denver & Rio Grande Alternative DRG1, 2, 3, 4, 5 and Alternative E without a Trail Cost<br>Estimate for Link 5 |              |                     |
|--|--------------|---------------------|
| ITEM   | COST         |                     |
|  | UNIT         | TOTAL<br>(MILLIONS) |
| Concrete Pavement (1)  | \$8,050,775  | \$8.06              |
| Asphalt Pavement (2)   | \$2,582,296  | \$2.58              |
| Earthwork (5)  | \$18,800,000 | \$18.80             |
| Barrier (6)  | \$1,327,066  | \$1.33              |
| Noise Walls (7)  | \$0          | \$0.00              |
| Retaining Walls (8)  | \$12,440,356 | \$12.44             |
| Structures (9)   | \$45,585,413 | \$45.59             |
| Striping (10)  | \$412,752    | \$0.41              |
| Fence (11)   | \$606,851    | \$0.61              |
| Drainage (12)  | \$2,798,256  | \$2.80              |
| Excavation (13)  | \$321,962    | \$0.32              |
| Demolition (14)  | \$1,065,007  | \$1.07              |
| Traffic Control (15)   | \$1,426,322  | \$1.43              |
| Landscaping (16)   | \$2,078,752  | \$2.08              |
| Lighting (17)  | \$1,214,615  | \$1.21              |
| Petroleum Pipelines Relocations (18)   | \$0          | \$0.00              |
| ATMS (19)  | \$1,140,936  | \$1.14              |
| Hazardous Waste Clean-up (Refineries) (22)   | \$0          | \$0.00              |
| Hazardous Waste Clean-up (Landfills) (22)  | \$0          | \$0.00              |
| <b>SUBTOTAL</b>  |              | <b>\$99.86</b>      |
| ROW (20)   | \$9,002,001  | \$9.00              |
| Wetlands Mitigation (21)   | \$3,114,035  | \$3.11              |
|  |              |                     |
| Signing  | 1%           | \$1.00              |
| Utilities (23)   | 8%           | \$7.99              |
| Misc. Items  | 5%           | \$4.99              |
| Mobilization   | 7%           | \$6.99              |
| Contingencies  | 15%          | \$14.98             |
| Engineering  | 15%          | \$14.98             |
| <b>TOTAL</b>   |              | <b>\$162.91</b>     |

**Notes:**

- |   |  |
|---|--|
| (1) See attachment 1.                                     | (14) See attachment 14 and attachment 2 figures. |
| (2) See attachment 2 and figures.                         | (15) See attachment 15.                          |
| (5) See attachment 5 and figures.                         | (16) See attachment 16.                          |
| (6) See attachment 6 and figure and attachment 9 figures. | (17) See attachment 17.                          |
| (7) See attachment 7 and figure.                          | (18) See attachment 18 and figures.              |
| (8) See attachment 8 and figures.                         | (19) See attachment 19.                          |
| (9) See attachment 9 and figures.                         | (20) See attachment 20 and figures.              |
| (10) See attachment 10.                                   | (21) See attachment 21.                          |
| (11) See attachment 11 and figures.                       | (22) See attachment 22 and figures.              |
| (12) See attachment 12 and figures.                       | (23) See attachment 23.                          |
| (13) See attachment 13 and figures.                       |  |

APPENDIX D  
(CONTINUED)

62 to 95 m (204 to 312ft) RIGHT OF WAY WIDTH  
COST ESTIMATE ATTACHMENTS

Note: Calculation spreadsheets, which are specific to the 62 to 95 m right of way width alternatives, are provided in this appendix. See Appendix C for the cost estimate figures



|                |                             |                 |     |             |          |
|----------------|-----------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS                 | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates          | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Concrete Pavement Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                             | <b>No.</b>      |     |             |          |

Concrete pavement is used for the mainline pavement and interchanges (ramps).

Roadway concrete costs are based on UDOT average bid prices 2003.

Roadway concrete pavement 12" thick @ ~\$41/m<sup>2</sup> for concrete. Add basecourse at \$10/m<sup>3</sup> assuming 2' (0.61 m) thick or \$6/m<sup>2</sup>. Total price \$47/m<sup>2</sup>.

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

|                  | <b>Concrete</b>     | <b>Base Course</b> | <b>Total</b>       |
|------------------|---------------------|--------------------|--------------------|
| North            |                     |                    |                    |
| Interchange      | \$6,191,192         | \$1,859,583        | <b>\$8,050,775</b> |
| South            |                     |                    |                    |
| Interchange      | \$2,640,322         | \$664,422          | <b>\$3,304,744</b> |
| 500 South        |                     |                    |                    |
| Interchange      | \$2,763,657         | \$636,677          | <b>\$3,400,334</b> |
| Parrish          |                     |                    |                    |
| Lane             |                     |                    |                    |
| Interchange      | \$2,763,657         | \$636,677          | <b>\$3,400,334</b> |
| <b>Subtotal=</b> | <b>\$14,358,828</b> | <b>\$3,797,359</b> |                    |
| <b>Total=</b>    | <b>\$18,156,187</b> |                    |                    |

Assume same cost as Parrish Interchange

#### Mainline Pavement

|              | <b>width</b> | (ft) | <b>Quantity</b> | <b>Total (ft)</b> |
|--------------|--------------|------|-----------------|-------------------|
| Outside      |              |      |                 |                   |
| Shoulder     | 12           |      | 2               | 24                |
| Travel Lanes | 12           |      | 4               | 48                |
| Inside       |              |      |                 |                   |
| Shoulder     | 4            |      | 2               | 8                 |
|              |              |      |                 | <b>80</b>         |
|              |              |      |                 | <b>24.4 m</b>     |

#### Unit Cost

\$/m<sup>2</sup>      \$47

| Alt   |        | Length,<br>Excluding N/S<br>Interchanges<br>(miles) | Length,<br>Excluding<br>N/S<br>Interchanges<br>(m) | Pavement<br>Area (m2) | Cost        | Cost of<br>Interchange<br>in Link | Total Cost          |
|-------|--------|---|--|-----------------------|-------------|-----------------------------------|---------------------|
| DRG 1 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 2.5   | 4,325  | 105,530               | \$4,959,910 | \$0                               | <b>\$4,959,910</b>  |
|       | Link 3 | 3.6   | 5,625  | 137,250               | \$6,450,750 | \$3,400,334                       | <b>\$9,851,084</b>  |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| DRG 2 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 2.5   | 4,325  | 105,530               | \$4,959,910 | \$0                               | <b>\$4,959,910</b>  |
|       | Link 3 | 3.6   | 5,625  | 137,250               | \$6,450,750 | \$3,400,334                       | <b>\$9,851,084</b>  |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| DRG 3 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 1.9   | 3,320  | 81,008                | \$3,807,376 | \$0                               | <b>\$3,807,376</b>  |
|       | Link 3 | 4.5   | 7,120  | 173,728               | \$8,165,216 | \$3,400,334                       | <b>\$11,565,550</b> |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| DRG 4 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 1.9   | 3,320  | 81,008                | \$3,807,376 | \$0                               | <b>\$3,807,376</b>  |
|       | Link 3 | 4.4   | 6,910  | 168,604               | \$7,924,388 | \$3,400,334                       | <b>\$11,324,722</b> |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| DRG 5 | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 1.9   | 3,320  | 81,008                | \$3,807,376 | \$0                               | <b>\$3,807,376</b>  |
|       | Link 3 | 4.3   | 6,705  | 163,602               | \$7,689,294 | \$3,400,334                       | <b>\$11,089,628</b> |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |
| ALT E | Link 1 | 0   | 0  | 0                     | \$0         | \$3,304,744                       | <b>\$3,304,744</b>  |
|       | Link 2 | 1.9   | 3,320  | 81,008                | \$3,807,376 | \$0                               | <b>\$3,807,376</b>  |
|       | Link 3 | 4.4   | 6,860  | 167,384               | \$7,867,048 | \$3,400,334                       | <b>\$11,267,382</b> |
|       | Link 4 | 4.1   | 6,510  | 158,844               | \$7,465,668 | \$3,400,334                       | <b>\$10,866,002</b> |
|       | Link 5 | 0   | 0  | 0                     | \$0         | \$8,050,775                       | <b>\$8,050,775</b>  |

|                |                            |                 |     |             |          |
|----------------|----------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS                | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates         | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Asphalt Pavement Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                            | <b>No.</b>      |     |             |          |

Asphalt pavement is used for frontage roads, crossing streets and cul-de-sacs.

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

Asphalt unit cost pavement based on UDOT average bid prices 2003.

Roadway asphalt pavement 8" thick @ ~\$25/m<sup>2</sup> for asphalt. Add basecourse at \$10/m<sup>3</sup> assuming 20" (0.51 m) thick or \$5/m<sup>2</sup>.

Crossing streets, Center Street and State Street are included in the termini interchanges.

DRG 1 (12): Redwood Road, 700 West, 400 West, 2600 South, 1500 South, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

DRG 2 (12): Redwood Road, 700 West, 400 West, 2600 South, 1500 South, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

DRG 3 (10): 1800 West, 1200 South, 1100 West, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

DRG 4 (10): 1800 West, 1100 West, 1200 South, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

DRG 5 (10): 1800 West, 1200 South, 1100 West, 500 South, 400 North, Pages Lane, Porter Lane, Parrish Lane, 1250 West, Glovers Lane

ALT E (4): 500 South, Parrish Lane, 1250 West, Glovers Lane

#### Contract Price for Termini Interchanges

|                   | <b>Asphalt</b>     | <b>Base Course</b> |
|-------------------|--------------------|--------------------|
| North Interchange | \$2,260,211        | \$322,085          |
| South Interchange | \$204,370          | \$24,400           |
| <b>Subtotal=</b>  | <b>\$2,464,581</b> | <b>\$346,485</b>   |
| <b>Total=</b>     | <b>\$2,811,066</b> |                    |

#### Cross Streets & Frontage Road widths

| Pavement widths  | (ft) | Quantity | Total (ft) |               |
|------------------|------|----------|------------|---------------|
| Outside Shoulder | 8    | 2        | 16         |               |
| Travel Lanes     | 12   | 2        | 24         |               |
| Median Lane      | 14   | 1        | 14         |               |
|                  |      |          | <b>54</b>  | <b>16.5 m</b> |

Length of arterial (m) 200

**Cul-de-Sac** R=15 m

Pavement Area 700 m<sup>2</sup>

#### Unit Cost

\$/m<sup>2</sup> \$30

| Alt   |        | Cross<br>Streets<br>excluding<br>interchanges | Cross Street<br>Pavement<br>Area (m2) | Frontage<br>Roads (m) | Frontage<br>Roads Area<br>(m2) | Cul-de-<br>sacs | Cul-de-<br>sac Area<br>(m2) | Total<br>Asphalt<br>Pavement<br>Area (m2) |
|-------|--------|---|---------------------------------------|-----------------------|--------------------------------|-----------------|-----------------------------|---|
| DRG 1 |        |   |                                       |                       |                                |                 |                             | <b>91,515</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 4   | 13,200                                | 920                   | 15,180                         | 1               | 700                         | 29,080                                    |
|       | Link 3 | 5   | 16,500                                | 1,140                 | 18,810                         | 13              | 9,100                       | 44,410                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| DRG 2 |        |   |                                       |                       |                                |                 |                             | <b>81,695</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 4   | 13,200                                | 240                   | 3,960                          | 3               | 2,100                       | 19,260                                    |
|       | Link 3 | 5   | 16,500                                | 1,140                 | 18,810                         | 13              | 9,100                       | 44,410                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| DRG 3 |        |   |                                       |                       |                                |                 |                             | <b>54,381</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 0   | 0                                     | 0                     | 0                              | 1               | 700                         | 700                                       |
|       | Link 3 | 7   | 23,100                                | 464                   | 7,656                          | 7               | 4,900                       | 35,656                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| DRG 4 |        |   |                                       |                       |                                |                 |                             | <b>59,308</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 0   | 0                                     | 0                     | 0                              | 1               | 700                         | 700                                       |
|       | Link 3 | 7   | 23,100                                | 805                   | 13,283                         | 6               | 4,200                       | 40,583                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| DRG 5 |        |   |                                       |                       |                                |                 |                             | <b>62,855</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 0   | 0                                     | 0                     | 0                              | 1               | 700                         | 700                                       |
|       | Link 3 | 7   | 23,100                                | 1,020                 | 16,830                         | 6               | 4,200                       | 44,130                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
| ALT E |        |   |                                       |                       |                                |                 |                             | <b>87,528</b>                             |
|       | Link 1 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |
|       | Link 2 | 0   | 0                                     | 0                     | 0                              | 1               | 700                         | 700                                       |
|       | Link 3 | 1   | 3,300                                 | 3,885                 | 64,103                         | 2               | 1,400                       | 68,803                                    |
|       | Link 4 | 3   | 9,900                                 | 450                   | 7,425                          | 1               | 700                         | 18,025                                    |
|       | Link 5 | 0   | 0                                     | 0                     | 0                              | 0               | 0                           | 0   |



| Alt   | Cost Not<br>Including<br>Termini<br>Interchanges |
|-------|--|
| DRG 1 |  |
|       | Link 1 \$228,770                                 |
|       | Link 2 \$872,400                                 |
|       | Link 3 \$1,332,300                               |
|       | Link 4 \$540,750                                 |
|       | Link 5 \$2,582,296                               |
|       | <b>\$5,556,516</b>                               |
| DRG 2 |  |
|       | Link 1 \$228,770                                 |
|       | Link 2 \$577,800                                 |
|       | Link 3 \$1,332,300                               |
|       | Link 4 \$540,750                                 |
|       | Link 5 \$2,582,296                               |
|       | <b>\$5,261,916</b>                               |
| DRG 3 |  |
|       | Link 1 \$228,770                                 |
|       | Link 2 \$21,000                                  |
|       | Link 3 \$1,069,680                               |
|       | Link 4 \$540,750                                 |
|       | Link 5 \$2,582,296                               |
|       | <b>\$4,442,496</b>                               |
| DRG 4 |  |
|       | Link 1 \$228,770                                 |
|       | Link 2 \$21,000                                  |
|       | Link 3 \$1,217,475                               |
|       | Link 4 \$540,750                                 |
|       | Link 5 \$2,582,296                               |
|       | <b>\$4,590,291</b>                               |
| DRG 5 |  |
|       | Link 1 \$228,770                                 |
|       | Link 2 \$21,000                                  |
|       | Link 3 \$1,323,900                               |
|       | Link 4 \$540,750                                 |
|       | Link 5 \$2,582,296                               |
|       | <b>\$4,696,716</b>                               |
| ALT E |  |
|       | Link 1 \$228,770                                 |
|       | Link 2 \$21,000                                  |
|       | Link 3 \$2,064,075                               |
|       | Link 4 \$540,750                                 |
|       | Link 5 \$2,582,296                               |
|       | <b>\$5,436,891</b>                               |

|                |                          |                 |     |             |          |
|----------------|--------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS              | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates       | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Trail Pavement Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                          | <b>No.</b>      |     |             |          |

Trail Pavement costs \$14/m2 are based on 2003 UDOT bid items using a 6" asphalt (2.4 m wide) pavement.

#### Unit Cost

|           |      |
|-----------|------|
| \$/m2     | \$14 |
| Width (m) | 2.4  |

Lengths: see Fence.dgn for trail lengths

| Alt          | Length (m) | Area (m2) | Total Cost       |
|--------------|------------|-----------|------------------|
| <b>DRG 1</b> |            |           |                  |
| Link 1       | 0          | 0         | <b>\$0</b>       |
| Link 2       | 4,325      | 10,380    | <b>\$145,320</b> |
| Link 3       | 5,625      | 13,500    | <b>\$189,000</b> |
| Link 4       | 6,510      | 15,624    | <b>\$218,736</b> |
| Link 5       | 0          | 0         | <b>\$0</b>       |
|              |            | 39,504    | <b>\$553,056</b> |
| <b>DRG 2</b> |            |           |                  |
| Link 1       | 0          | 0         | <b>\$0</b>       |
| Link 2       | 4,325      | 10,380    | <b>\$145,320</b> |
| Link 3       | 5,625      | 13,500    | <b>\$189,000</b> |
| Link 4       | 6,510      | 15,624    | <b>\$218,736</b> |
| Link 5       | 0          | 0         | <b>\$0</b>       |
|              |            | 39,504    | <b>\$553,056</b> |
| <b>DRG 3</b> |            |           |                  |
| Link 1       | 0          | 0         | <b>\$0</b>       |
| Link 2       | 3,320      | 7,968     | <b>\$111,552</b> |
| Link 3       | 7,120      | 17,088    | <b>\$239,232</b> |
| Link 4       | 6,510      | 15,624    | <b>\$218,736</b> |
| Link 5       | 0          | 0         | <b>\$0</b>       |
|              |            | 40,680    | <b>\$569,520</b> |
| <b>DRG 4</b> |            |           |                  |
| Link 1       | 0          | 0         | <b>\$0</b>       |
| Link 2       | 3,320      | 7,968     | <b>\$111,552</b> |
| Link 3       | 6,910      | 16,584    | <b>\$232,176</b> |
| Link 4       | 6,510      | 15,624    | <b>\$218,736</b> |
| Link 5       | 0          | 0         | <b>\$0</b>       |
|              |            | 40,176    | <b>\$562,464</b> |
| <b>DRG 5</b> |            |           |                  |
| Link 1       | 0          | 0         | <b>\$0</b>       |
| Link 2       | 3,320      | 7,968     | <b>\$111,552</b> |
| Link 3       | 6,705      | 16,092    | <b>\$225,288</b> |
| Link 4       | 6,510      | 15,624    | <b>\$218,736</b> |
| Link 5       | 0          | 0         | <b>\$0</b>       |
|              |            | 39,684    | <b>\$555,576</b> |
| <b>ALT E</b> |            |           |                  |
| Link 1       | 0          | 0         | <b>\$0</b>       |
| Link 2       | 3,320      | 7,968     | <b>\$111,552</b> |
| Link 3       | 6,860      | 16,464    | <b>\$230,496</b> |
| Link 4       | 6,510      | 15,624    | <b>\$218,736</b> |
| Link 5       | 0          | 0         | <b>\$0</b>       |
|              |            | 40,056    | <b>\$560,784</b> |

|                |                       |                 |     |             |          |
|----------------|-----------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS           | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates    | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Trail Mulch Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                       | <b>No.</b>      |     |             |          |

Trail Mulch costs \$0.40/m2 are based on 2003 UDOT bid items using a 6" mulch.

#### Unit Cost

|           |        |
|-----------|--------|
| \$/m2     | \$0.40 |
| Width (m) | 2.0    |

Lengths: see Attachment 11 figures

| Alt          | Length (m) | Area (m2) | Total Cost      |
|--------------|------------|-----------|-----------------|
| <b>DRG 1</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 4,325      | 8,650     | <b>\$3,460</b>  |
| Link 3       | 5,625      | 11,250    | <b>\$4,500</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 32,920    | <b>\$13,168</b> |
| <b>DRG 2</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 4,325      | 8,650     | <b>\$3,460</b>  |
| Link 3       | 5,625      | 11,250    | <b>\$4,500</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 32,920    | <b>\$13,168</b> |
| <b>DRG 3</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 3,320      | 6,640     | <b>\$2,656</b>  |
| Link 3       | 7,120      | 14,240    | <b>\$5,696</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 33,900    | <b>\$13,560</b> |
| <b>DRG 4</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 3,320      | 6,640     | <b>\$2,656</b>  |
| Link 3       | 6,910      | 13,820    | <b>\$5,528</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 33,480    | <b>\$13,392</b> |
| <b>DRG 5</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 3,320      | 6,640     | <b>\$2,656</b>  |
| Link 3       | 6,705      | 13,410    | <b>\$5,364</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 33,070    | <b>\$13,228</b> |
| <b>ALT E</b> |            |           |                 |
| Link 1       | 0          | 0         | <b>\$0</b>      |
| Link 2       | 3,320      | 6,640     | <b>\$2,656</b>  |
| Link 3       | 6,860      | 13,720    | <b>\$5,488</b>  |
| Link 4       | 6,510      | 13,020    | <b>\$5,208</b>  |
| Link 5       | 0          | 0         | <b>\$0</b>      |
|              |            | 33,380    | <b>\$13,352</b> |

|         |                     |          |    |      |          |
|---------|---------------------|----------|----|------|----------|
| Project | Legacy SEIS         | Computed | TW | Date | 5/1/2004 |
| Subject | DRG Cost Estimates  | Checked  |    | Date |          |
| Task    | Earthwork Estimates | Sheet    |    | Of   |          |
| Job No. |                     | No.      |    |      |          |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

|                   |                     |
|-------------------|---------------------|
|                   | Total Cost          |
| North Interchange | \$18,701,079        |
| South Interchange | \$14,518,266        |
| <b>Total=</b>     | <b>\$33,219,345</b> |

#### Unit Cost

|                      |              |                                |
|----------------------|--------------|--------------------------------|
| Southern Interchange |              | \$11.76                        |
| Northern Interchange |              | \$10.43                        |
| Mainline Sections    | near 500 S.  | \$9.59                         |
|                      | near Glovers | \$7.53                         |
|                      |              | <u>\$9.83 average mainline</u> |

Approx. distance (D) to attain grade separation both approaches 350 m, According to ASSHTO, Exhibit 10-8 for flat terrain.  
700 m

#### Cross sectional Area

|                        |      |                     |           |
|------------------------|------|---------------------|-----------|
| fill height (m)        | ft   | Area m <sup>2</sup> |           |
| 2                      | 6.0  | 104                 | Section B |
| 6                      | 20.0 | 345                 | Section A |
| Average m <sup>2</sup> |      | <b>230</b>          |           |

Structures excluding interchanges are for crossing streets, RR crossings, and Mill Creek.

| Alt          | Length Excluding<br>Termini<br>Interchanges (m) | Structures,<br>Excluding<br>Interchanges | Structure<br>Length, approx.<br>(m) | Length on<br>Structure (m) | Net Length (m) |
|--------------|---|--|-------------------------------------|----------------------------|----------------|
| <b>DRG 1</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 0                                   | 0                          | 0              |
| Link 2       | 4,325   | 3  | 55                                  | 165                        | 4,160          |
| Link 3       | 5,625   | 6  | 55                                  | 330                        | 5,295          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 0                                   | 0                          | 0              |
| <b>DRG 2</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 4,325   | 3  | 55                                  | 165                        | 4,160          |
| Link 3       | 5,625   | 6  | 55                                  | 330                        | 5,295          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |
| <b>DRG 3</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 3,320   | 0  | 55                                  | 0                          | 3,320          |
| Link 3       | 7,120   | 7  | 55                                  | 385                        | 6,735          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |
| <b>DRG 4</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 3,320   | 0  | 55                                  | 0                          | 3,320          |
| Link 3       | 6,910   | 7  | 55                                  | 385                        | 6,525          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |
| <b>DRG 5</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 3,320   | 0  | 55                                  | 0                          | 3,320          |
| Link 3       | 6,705   | 7  | 55                                  | 385                        | 6,320          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |
| <b>ALT E</b> |   |  |                                     |                            |                |
| Link 1       | 0   | 0  | 55                                  | 0                          | 0              |
| Link 2       | 3,320   | 0  | 55                                  | 0                          | 3,320          |
| Link 3       | 6,860   | 1  | 55                                  | 55                         | 6,805          |
| Link 4       | 6,510   | 3  | 55                                  | 165                        | 6,345          |
| Link 5       | 0   | 0  | 55                                  | 0                          | 0              |



|         |                     |          |    |      |          |
|---------|---------------------|----------|----|------|----------|
| Project | Legacy SEIS         | Computed | TW | Date | 5/1/2004 |
| Subject | DRG Cost Estimates  | Checked  |    | Date |          |
| Task    | Earthwork Estimates | Sheet    |    | Of   |          |
| Job No. |                     | No.      |    |      |          |

**Lengths of Elevated Fill, See Earthwork Figure 1 and Figure 2**

|        | DRG1  | DRG2  | DRG3  | DRG4  | DRG5  | ALT E |
|--------|-------|-------|-------|-------|-------|-------|
| Link 1 | 0     | 0     | 0     | 0     | 0     | 0     |
| Link 2 | 2,100 | 1,182 | 0     | 0     | 0     | 0     |
| Link 3 | 4,200 | 4,200 | 4,995 | 4,765 | 4,125 | 700   |
| Link 4 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 |
| Link 5 | 0     | 0     | 0     | 0     | 0     | 0     |
|        | 7,700 | 6,782 | 6,395 | 6,165 | 5,525 | 2,100 |

**Fill Volumes**

At Elevated Sections for Street Crossings

| Alt          | Cross Sectional  |  |  |
|--------------|--|--|--|
|              | Approx. Length of Alignment elevated for Cross Streets (m) | Area at crossing streets (m <sup>2</sup> ) | Fill volume for crossing streets (m <sup>3</sup> ) |
| <b>DRG 1</b> |  |  |  |
| Link 1       | 0  | 230  | 0  |
| Link 2       | 2,100  | 230  | 483,000  |
| Link 3       | 4,200  | 230  | 966,000  |
| Link 4       | 1,400  | 230  | 322,000  |
| Link 5       | 0  | 230  | 0  |
|              |  |  | 1,771,000  |
| <b>DRG 2</b> |  |  |  |
| Link 1       | 0  | 230  | 0  |
| Link 2       | 1,182  | 230  | 271,860  |
| Link 3       | 4,200  | 230  | 966,000  |
| Link 4       | 1,400  | 230  | 322,000  |
| Link 5       | 0  | 230  | 0  |
|              |  |  | 1,559,860  |
| <b>DRG 3</b> |  |  |  |
| Link 1       | 0  | 230  | 0  |
| Link 2       | 0  | 230  | 0  |
| Link 3       | 4,995  | 230  | 1,148,850  |
| Link 4       | 1,400  | 230  | 322,000  |
| Link 5       | 0  | 230  | 0  |
|              |  |  | 1,470,850  |
| <b>DRG 4</b> |  |  |  |
| Link 1       | 0  | 230  | 0  |
| Link 2       | 0  | 230  | 0  |
| Link 3       | 4,765  | 230  | 1,095,950  |
| Link 4       | 1,400  | 230  | 322,000  |
| Link 5       | 0  | 230  | 0  |
|              |  |  | 1,417,950  |
| <b>DRG 5</b> |  |  |  |
| Link 1       | 0  | 230  | 0  |
| Link 2       | 0  | 230  | 0  |
| Link 3       | 4,125  | 230  | 948,750  |
| Link 4       | 1,400  | 230  | 322,000  |
| Link 5       | 0  | 230  | 0  |
|              |  |  | 1,270,750  |
| <b>ALT E</b> |  |  |  |
| Link 1       | 0  | 230  | 0  |
| Link 2       | 0  | 230  | 0  |
| Link 3       | 700  | 230  | 161,000  |
| Link 4       | 1,400  | 230  | 322,000  |
| Link 5       | 0  | 230  | 0  |

|         |                     |          |    |      |          |
|---------|---------------------|----------|----|------|----------|
| Project | Legacy SEIS         | Computed | TW | Date | 5/1/2004 |
| Subject | DRG Cost Estimates  | Checked  |    | Date |          |
| Task    | Earthwork Estimates | Sheet    |    | Of   |          |
| Job No. |                     | No.      |    |      |          |

483,000

Mainline at Average, 2m, Sections

| Alt    | Length Excluding<br>Termini<br>Interchanges (m) | Net Length (m) | Length at<br>average (2-m)<br>fill height (m) | Cross Sectional<br>Area, 2-m fill<br>height (m <sup>2</sup> ) | Fill Volume for<br>Average<br>Section(m <sup>3</sup> ) |
|--------|---|----------------|---|---|--|
| DRG 1  |   |                |   |   |  |
| Link 1 | 0   | 0              | 0   | 104   | 0  |
| Link 2 | 4,325   | 4,160          | 2,060   | 104   | 214,240  |
| Link 3 | 5,625   | 5,295          | 1,095   | 104   | 113,880  |
| Link 4 | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5 | 0   | 0              | 0   | 104   | 0  |
| DRG 2  |   |                |   |   |  |
| Link 1 | 0   | 0              | 0   | 104   | 0  |
| Link 2 | 4,325   | 4,160          | 2,978   | 104   | 309,712  |
| Link 3 | 5,625   | 5,295          | 1,095   | 104   | 113,880  |
| Link 4 | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5 | 0   | 0              | 0   | 104   | 0  |
| DRG 3  |   |                |   |   |  |
| Link 1 | 0   | 0              | 0   | 104   | 0  |
| Link 2 | 3,320   | 3,320          | 3,320   | 104   | 345,280  |
| Link 3 | 7,120   | 6,735          | 1,740   | 104   | 180,960  |
| Link 4 | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5 | 0   | 0              | 0   | 104   | 0  |
| DRG 4  |   |                |   |   |  |
| Link 1 | 0   | 0              | 0   | 104   | 0  |
| Link 2 | 3,320   | 3,320          | 3,320   | 104   | 345,280  |
| Link 3 | 6,910   | 6,525          | 1,760   | 104   | 183,040  |
| Link 4 | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5 | 0   | 0              | 0   | 104   | 0  |
| DRG 5  |   |                |   |   |  |
| Link 1 | 0   | 0              | 0   | 104   | 0  |
| Link 2 | 3,320   | 3,320          | 3,320   | 104   | 345,280  |
| Link 3 | 6,705   | 6,320          | 2,195   | 104   | 228,280  |
| Link 4 | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5 | 0   | 0              | 0   | 104   | 0  |
| ALT E  |   |                |   |   |  |
| Link 1 | 0   | 0              | 0   | 104   | 0  |
| Link 2 | 3,320   | 3,320          | 3,320   | 104   | 345,280  |
| Link 3 | 6,860   | 6,805          | 6,105   | 104   | 634,920  |
| Link 4 | 6,510   | 6,345          | 4,945   | 104   | 514,280  |
| Link 5 | 0   | 0              | 0   | 104   | 0  |

|         |                     |          |    |      |          |
|---------|---------------------|----------|----|------|----------|
| Project | Legacy SEIS         | Computed | TW | Date | 5/1/2004 |
| Subject | DRG Cost Estimates  | Checked  |    | Date |          |
| Task    | Earthwork Estimates | Sheet    |    | Of   |          |
| Job No. |                     | No.      |    |      |          |

**Volume reductions for 204 foot ROW width**

| Alt          | Length with reduced Row & elevated for cross streets (m) | Area Reduced with elevated alignment (m <sup>2</sup> ) | Length with reduced ROW width (m) | Area Reduced with regular section (m <sup>2</sup> ) | Total Volume reduced with 204 ROW (m <sup>3</sup> ) | Unit Cost | Cost Reductions |
|--------------|--|--|-----------------------------------|---|---|-----------|-----------------|
| <b>DRG 1</b> |  |  |                                   |   |   |           |                 |
| Link 1       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| Link 2       | 21   | 24   | 464                               | 10  | 5,148   | \$9.83    | \$50,605        |
| Link 3       | 536  | 24   | 615                               | 10  | 19,019  | \$9.83    | \$186,961       |
| Link 4       | 0  | 24   | 5,552                             | 10  | 55,518  | \$9.83    | \$545,742       |
| Link 5       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| <b>DRG 2</b> |  |  |                                   |   |   |           |                 |
| Link 1       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| Link 2       | 1,085  | 24   | 817                               | 10  | 34,210  | \$9.83    | \$336,288       |
| Link 3       | 536  | 24   | 615                               | 10  | 19,019  | \$9.83    | \$186,961       |
| Link 4       | 0  | 24   | 5,552                             | 10  | 55,518  | \$9.83    | \$545,742       |
| Link 5       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| <b>DRG 3</b> |  |  |                                   |   |   |           |                 |
| Link 1       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| Link 2       | 0  | 24   | 1,261                             | 10  | 12,611  | \$9.83    | \$123,966       |
| Link 3       | 679  | 24   | 962                               | 10  | 25,914  | \$9.83    | \$254,739       |
| Link 4       | 0  | 24   | 5,552                             | 10  | 55,518  | \$9.83    | \$545,742       |
| Link 5       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| <b>DRG 4</b> |  |  |                                   |   |   |           |                 |
| Link 1       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| Link 2       | 0  | 24   | 1,261                             | 10  | 12,611  | \$9.83    | \$123,966       |
| Link 3       | 917  | 24   | 747                               | 10  | 29,480  | \$9.83    | \$289,790       |
| Link 4       | 0  | 24   | 5,552                             | 10  | 55,518  | \$9.83    | \$545,742       |
| Link 5       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| <b>DRG 5</b> |  |  |                                   |   |   |           |                 |
| Link 1       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| Link 2       | 0  | 24   | 1,261                             | 10  | 12,611  | \$9.83    | \$123,966       |
| Link 3       | 553  | 24   | 1,020                             | 10  | 23,462  | \$9.83    | \$230,633       |
| Link 4       | 0  | 24   | 5,552                             | 10  | 55,518  | \$9.83    | \$545,742       |
| Link 5       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| <b>ALT E</b> |  |  |                                   |   |   |           |                 |
| Link 1       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |
| Link 2       | 0  | 24   | 1,261                             | 10  | 12,611  | \$9.83    | \$123,966       |
| Link 3       | 0  | 24   | 2,302                             | 10  | 23,016  | \$9.83    | \$226,247       |
| Link 4       | 0  | 24   | 5,552                             | 10  | 55,518  | \$9.83    | \$545,742       |
| Link 5       | 0  | 24   | 0                                 | 10  | 0   | \$9.83    | \$0             |

|         |                     |          |    |      |          |
|---------|---------------------|----------|----|------|----------|
| Project | Legacy SEIS         | Computed | TW | Date | 5/1/2004 |
| Subject | DRG Cost Estimates  | Checked  |    | Date |          |
| Task    | Earthwork Estimates | Sheet    |    | Of   |          |
| Job No. |                     | No.      |    |      |          |

#### Estimated Cost

| Alt          | Total Fill Volume<br>(m <sup>3</sup> ) | Unit Cost | Cost (Excluding<br>Termini<br>Interchanges) | Cost of Termini<br>Interchanges | Total Cost   |
|--------------|--|-----------|---|---------------------------------|--------------|
| <b>DRG 1</b> |  |           |   |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0   | \$14,518,266                    | \$14,600,000 |
| Link 2       | 692,092                                | \$9.83    | \$6,803,264                                 | \$0                             | \$6,900,000  |
| Link 3       | 1,060,861                              | \$9.83    | \$10,428,260                                | \$0                             | \$10,500,000 |
| Link 4       | 780,762                                | \$9.83    | \$7,674,890                                 | \$0                             | \$7,700,000  |
| Link 5       | 0                                      | \$9.83    | \$0   | \$18,701,079                    | \$18,800,000 |
|              | 2,533,715                              |           |   |                                 | \$58,500,000 |
| <b>DRG 2</b> |  |           |   |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0   | \$14,518,266                    | \$14,600,000 |
| Link 2       | 547,362                                | \$9.83    | \$5,380,565                                 | \$0                             | \$5,400,000  |
| Link 3       | 1,060,861                              | \$9.83    | \$10,428,260                                | \$0                             | \$10,500,000 |
| Link 4       | 780,762                                | \$9.83    | \$7,674,890                                 | \$0                             | \$7,700,000  |
| Link 5       | 0                                      | \$9.83    | \$0   | \$18,701,079                    | \$18,800,000 |
|              | 2,388,984                              |           |   |                                 | \$57,000,000 |
| <b>DRG 3</b> |  |           |   |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0   | \$14,518,266                    | \$14,600,000 |
| Link 2       | 332,669                                | \$9.83    | \$3,270,136                                 | \$0                             | \$3,300,000  |
| Link 3       | 1,303,896                              | \$9.83    | \$12,817,294                                | \$0                             | \$12,900,000 |
| Link 4       | 780,762                                | \$9.83    | \$7,674,890                                 | \$0                             | \$7,700,000  |
| Link 5       | 0                                      | \$9.83    | \$0   | \$18,701,079                    | \$18,800,000 |
|              | 2,417,327                              |           |   |                                 | \$57,300,000 |
| <b>DRG 4</b> |  |           |   |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0   | \$14,518,266                    | \$14,600,000 |
| Link 2       | 332,669                                | \$9.83    | \$3,270,136                                 | \$0                             | \$3,300,000  |
| Link 3       | 1,249,510                              | \$9.83    | \$12,282,681                                | \$0                             | \$12,300,000 |
| Link 4       | 780,762                                | \$9.83    | \$7,674,890                                 | \$0                             | \$7,700,000  |
| Link 5       | 0                                      | \$9.83    | \$0   | \$18,701,079                    | \$18,800,000 |
|              | 2,362,941                              |           |   |                                 | \$56,700,000 |
| <b>DRG 5</b> |  |           |   |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0   | \$14,518,266                    | \$14,600,000 |
| Link 2       | 332,669                                | \$9.83    | \$3,270,136                                 | \$0                             | \$3,300,000  |
| Link 3       | 1,153,568                              | \$9.83    | \$11,339,571                                | \$0                             | \$11,400,000 |
| Link 4       | 780,762                                | \$9.83    | \$7,674,890                                 | \$0                             | \$7,700,000  |
| Link 5       | 0                                      | \$9.83    | \$0   | \$18,701,079                    | \$18,800,000 |
|              | 2,266,999                              |           |   |                                 | \$55,800,000 |
| <b>ALT E</b> |  |           |   |                                 |              |
| Link 1       | 0                                      | \$9.83    | \$0   | \$14,518,266                    | \$14,600,000 |
| Link 2       | 332,669                                | \$9.83    | \$3,270,136                                 | \$0                             | \$3,300,000  |
| Link 3       | 772,904                                | \$9.83    | \$7,597,646                                 | \$0                             | \$7,600,000  |
| Link 4       | 780,762                                | \$9.83    | \$7,674,890                                 | \$0                             | \$7,700,000  |
| Link 5       | 0                                      | \$9.83    | \$0   | \$18,701,079                    | \$18,800,000 |
|              | 1,886,335                              |           |   |                                 | \$52,000,000 |

Total Fill volume equals volume for elevated sections, for average fill height sections, and for frontage roads, cul-de-sacs, and Cross Streets.



|         |                            |          |    |      |
|---------|----------------------------|----------|----|------|
| Project | Legacy SEIS                | Computed | TW | Date |
| Subject | DRG Cost Estimates         | Checked  |    | Date |
| Task    | Concrete Barrier Estimates | Sheet    |    | Of   |
| Job No. |                            | No.      |    |      |

5/1/2004

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

North Interchange                \$1,327,066      \$1,327,066.00      Link 5 All  
South Interchange                \$980,982        \$980,982.00      Link 1 All

**Total=      \$2,308,048**

Barrier Length            145            runout length in meters, AASHTO 2002, Table 5.8 @ 70 mph  
Unit cost                    112            \$/m 2003 UDOT Bid item 028410080  
lengths                      4              two approaches with barrier outside and inside

Interior Structures include crossing streets, RR crossing and Mill Creek.

| Alt           | Links | ROW  | Interior<br>Structures<br>(obstacle) | length (m)     | Cost Excluding<br>Termini<br>Interchanges | Total            |
|---------------|-------|------|--------------------------------------|----------------|---|------------------|
| DRG 1<br>204' | 2     | 204' | 4                                    | 2320<br>1826.6 | \$259,840<br>\$204,579                    | <b>\$464,419</b> |
|               | 3     | 204' | 6                                    | 3480<br>3370   | \$389,760<br>\$377,440                    | <b>\$767,200</b> |
| DRG 2         | 2     | 204' | 4                                    | 2320<br>3607.4 | \$259,840<br>\$404,029                    | <b>\$663,869</b> |
|               | 3     | 204' | 6                                    | 3480<br>3370   | \$389,760<br>\$377,440                    | <b>\$767,200</b> |
| DRG 3         | 2     | 204' | 0                                    | 0<br>3566.8    | \$0<br>\$399,482                          | <b>\$399,482</b> |
|               | 3     | 204' | 8                                    | 4640<br>4056.7 | \$519,680<br>\$454,350                    | <b>\$974,030</b> |
| DRG 4         | 2     | 204' | 0                                    | 0<br>3566.8    | \$0<br>\$399,482                          | <b>\$399,482</b> |
|               | 3     | 204' | 9                                    | 5220<br>2753.7 | \$584,640<br>\$308,414                    | <b>\$893,054</b> |
| DRG 5         | 2     | 204' | 0                                    | 0<br>3566.8    | \$0<br>\$399,482                          | <b>\$399,482</b> |
|               | 3     | 204' | 8                                    | 4640<br>2627.9 | \$519,680<br>\$294,325                    | <b>\$814,005</b> |
| ALT E         | 2     | 204' | 0                                    | 0<br>3566.8    | \$0<br>\$399,482                          | <b>\$399,482</b> |
|               | 3     | 204' | 2                                    | 1160<br>4826.4 | \$129,920<br>\$540,557                    | <b>\$670,477</b> |
| ALL           | 4     | 204' | 3                                    | 1740<br>4288.7 | \$194,880<br>\$480,334                    | <b>\$675,214</b> |

|                |                    |                 |    |             |           |
|----------------|--------------------|-----------------|----|-------------|-----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | TW | <b>Date</b> | 5/12/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |    | <b>Date</b> |           |
| <b>Task</b>    | Noise Walls        | <b>Sheet</b>    |    | <b>Of</b>   |           |
| <b>Job No.</b> |                    | <b>No.</b>      |    |             |           |

Noise walls (12') are placed along residential areas, parks, and the golf course.

**Unit Cost**            **350 \$/m**                    per UDOT direction

### Noise Walls Lengths

|                  | ALT E      | DRG 1              | DRG 2              | DRG 3              | DRG 4              | DRG 5              |
|------------------|------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Link 2           | 0          | 1501               | 555                | 0                  | 0                  | 0                  |
|                  |            | 801                | 258                |                    |                    |                    |
|                  |            | 216                | 1301               |                    |                    |                    |
|                  |            | 1155               | 216                |                    |                    |                    |
|                  |            |                    | 3064               |                    |                    |                    |
| Total            | 0          | 3673               | 5394               | 0                  | 0                  | 0                  |
| Cost             | \$0        | \$1,285,550        | \$1,887,900        | \$0                | \$0                | \$0                |
| Link 3           | 0          | 1121               | 1121               |                    |                    | 1145               |
|                  |            | 774                | 774                | 1235               | 182                | 182                |
|                  |            | 806                | 806                | 806                | 270                | 270                |
|                  |            | 527                | 527                | 527                | 1215               | 378                |
|                  |            | 2039               | 2039               | 2039               | 2602               | 2120               |
|                  |            | 816                | 816                | 816                | 816                | 816                |
|                  |            | 523                | 523                | 523                | 523                | 554                |
|                  |            | 64                 | 64                 | 64                 |                    | 695                |
| Total            | 0          | 6670               | 6670               | 6010               | 5608               | 6160               |
| Cost             | \$0        | \$2,334,500        | \$2,334,500        | \$2,103,500        | \$1,962,800        | \$2,156,000        |
| <b>Tot. Cost</b> | <b>\$0</b> | <b>\$3,620,050</b> | <b>\$4,222,400</b> | <b>\$2,103,500</b> | <b>\$1,962,800</b> | <b>\$2,156,000</b> |

|         |                          |          |    |      |           |
|---------|--------------------------|----------|----|------|-----------|
| Project | Legacy SEIS              | Computed | TW | Date | 2/14/2004 |
| Subject | DRG Cost Estimates       | Checked  |    | Date |           |
| Task    | Retaining Wall Estimates | Sheet    |    | Of   |           |
| Job No. |                          | No.      |    |      |           |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

**Contract Price for Termini Interchanges**

|               |                   |                     |                |    |                             |
|---------------|-------------------|---------------------|----------------|----|-----------------------------|
| Link 5 All    | North Interchange | \$12,440,356        | 37,281         | M2 | \$333.69 per m <sup>2</sup> |
| Link 1 All    | South Interchange | \$621,432           | 1,661          | M2 | \$374.13 per m <sup>2</sup> |
| <b>Total=</b> |                   | <b>\$13,061,788</b> | <b>Average</b> |    | <b>\$350.00</b>             |

250 (m) Length of retaining wall approaching each cross street  
500 (m) for both sides of cross street

**Lengths**

| DRG1               | DRG2               | DRG3               | DRG4               | DRG5               | ALT E            |            |
|--------------------|--------------------|--------------------|--------------------|--------------------|------------------|------------|
| 675                | 675                | 0                  | 0                  | 0                  | 0                | Link 2     |
| 500                | 500                |                    |                    |                    |                  |            |
| 500                | 500                |                    |                    |                    |                  |            |
| 3350               | 3350               | 0                  | 0                  | 0                  | 0                |            |
| <b>\$2,931,250</b> | <b>\$2,931,250</b> | <b>\$0</b>         | <b>\$0</b>         | <b>\$0</b>         | <b>\$0</b>       | Structures |
| 71                 | 98                 | 230                | 230                | 230                | 230              |            |
| 30                 | 88                 | 71                 | 71                 | 71                 | 71               |            |
| 32                 | 100                | 49                 | 49                 | 49                 | 49               |            |
| 32                 | 74                 | 60                 | 60                 | 60                 | 60               |            |
| 338                | 78                 | 55                 | 55                 | 55                 | 55               |            |
| 85                 | 182                | 59                 | 59                 | 59                 | 59               |            |
| 38                 | 64                 | 92                 | 92                 | 92                 | 92               |            |
|                    | 84                 | 53                 | 53                 | 53                 | 53               |            |
|                    | 57                 | 91                 | 91                 | 91                 | 91               |            |
|                    | 429                | 114                | 114                | 114                | 114              |            |
|                    |                    | 58                 | 58                 | 58                 | 58               |            |
|                    |                    | 41                 | 41                 | 41                 | 41               |            |
|                    |                    | 99                 | 99                 | 99                 | 99               |            |
|                    |                    | 375                | 375                | 375                | 375              |            |
|                    |                    | 400                | 400                | 400                | 400              |            |
|                    |                    | 99                 | 99                 | 99                 | 99               |            |
| 626                | 1254               | 1946               | 1946               | 1946               | 1946             |            |
| <b>\$1,336,825</b> | <b>\$1,501,675</b> | <b>\$510,825</b>   | <b>\$510,825</b>   | <b>\$510,825</b>   | <b>\$510,825</b> | 204'       |
| 500                | 500                | 908                | 908                | 908                | 908              | Link 3     |
| 500                | 500                | 915                | 1368               | 741                |                  |            |
| 921                | 921                | 921                | 500                | 500                |                  |            |
| 500                | 500                | 500                | 500                | 500                |                  |            |
| 500                | 500                | 500                |                    |                    |                  |            |
| 5842               | 5842               | 7488               | 6552               | 5298               | 0                |            |
| <b>\$5,111,750</b> | <b>\$5,111,750</b> | <b>\$6,552,000</b> | <b>\$5,733,000</b> | <b>\$4,635,750</b> | <b>\$0</b>       | Structures |
| 52                 | 52                 | 117                | 117                | 117                | 83               |            |
| 34                 | 34                 | 109                | 109                | 109                | 167              |            |
| 106                | 106                | 290                | 64                 | 93                 | 192              |            |
| 68                 | 68                 | 143                | 65                 | 237                | 414              |            |
| 64                 | 64                 | 36                 | 73                 | 305                | 151              |            |
| 27                 | 27                 | 34                 | 305                | 294                | 198              |            |
| 81                 | 81                 | 44                 | 294                | 117                | 304              |            |
| 168                | 168                | 68                 | 117                |                    | 123              |            |
| 71                 | 71                 | 64                 |                    |                    | 282              |            |
| 294                | 294                | 27                 |                    |                    | 384              |            |
| 295                | 295                | 82                 |                    |                    | 271              |            |
| 118                | 118                | 168                |                    |                    | 231              |            |
|                    |                    | 69                 |                    |                    |                  |            |
|                    |                    | 294                |                    |                    |                  |            |
|                    |                    | 294                |                    |                    |                  |            |
|                    |                    | 117                |                    |                    |                  |            |
| 1378               | 1378               | 1956               | 1144               | 1272               | 2800             |            |
| <b>\$2,406,425</b> | <b>\$2,406,425</b> | <b>\$3,134,250</b> | <b>\$2,593,500</b> | <b>\$2,188,200</b> | <b>\$735,000</b> | 204'       |
| 500                | 500                | 500                | 500                | 500                | 500              | Link 4     |
| <b>\$875,000</b>   | <b>\$875,000</b>   | <b>\$875,000</b>   | <b>\$875,000</b>   | <b>\$875,000</b>   | <b>\$875,000</b> | Cost       |
| <b>\$175,000</b>   | <b>\$175,000</b>   | <b>\$175,000</b>   | <b>\$175,000</b>   | <b>\$175,000</b>   | <b>\$175,000</b> | 204'       |
| 12196              | 12824              | 12390              | 10642              | 9516               | 5746             | Total 2-4  |

**Costs**

0.75 (m) average height 204' width  
2.5 (m) average height

| Alt   | Cost excluding interchanges | Cost of Termini Interchanges | Total Cost          |
|-------|-----------------------------|------------------------------|---------------------|
| DRG 1 | \$12,661,250                | \$13,061,788                 | <b>\$25,723,038</b> |
| DRG 2 | \$12,826,100                | \$13,061,788                 | <b>\$25,887,888</b> |
| DRG 3 | \$11,072,075                | \$13,061,788                 | <b>\$24,133,863</b> |
| DRG 4 | \$9,712,325                 | \$13,061,788                 | <b>\$22,774,113</b> |
| DRG 5 | \$8,209,775                 | \$13,061,788                 | <b>\$21,271,563</b> |
| ALT E | \$2,120,825                 | \$13,061,788                 | <b>\$15,182,613</b> |

|                |                    |                 |    |             |           |
|----------------|--------------------|-----------------|----|-------------|-----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | TW | <b>Date</b> | 5/13/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |    | <b>Date</b> |           |
| <b>Task</b>    | Structures Cost    | <b>Sheet</b>    |    | <b>Of</b>   |           |
| <b>Job No.</b> |                    | <b>No.</b>      |    |             |           |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

Legacy goes over cross streets for the D&RG alternatives. Cross Streets go over Legacy for Alternative E.

#### Contract Price for Termini Interchanges

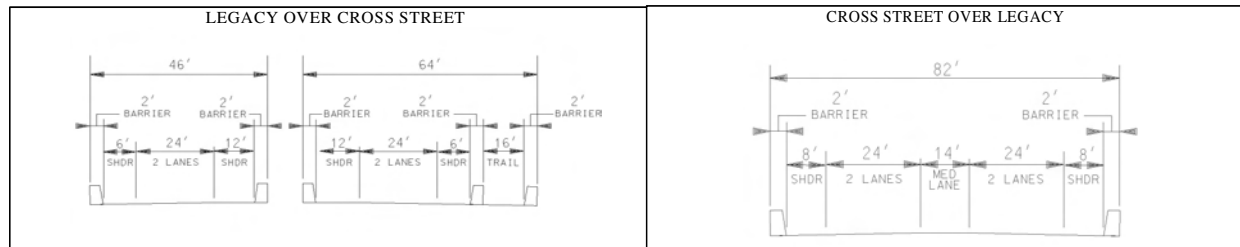
|                   |                     |        |
|-------------------|---------------------|--------|
| North Interchange | \$45,585,413        | Link 5 |
| South Interchange | \$9,522,340         | Link 1 |
| <b>Total=</b>     | <b>\$55,107,753</b> |        |

#### Contract Unit Cost

|                          |                     | structure area                               |
|--------------------------|---------------------|--|
| Piles:                   | \$5,888,955         | 5694   |
| Materials:               | \$19,872,131        | 3003   |
| Set Up:                  | \$2,208,000         | 4393   |
| Excavation:              | \$321,962           | 6491   |
| Reinforcing Steel:       | \$6,527,653         | 3274   |
| Substructure Concrete:   | \$3,951,963         | 3455   |
| Superstructure Concrete: | \$4,349,733         | 4631   |
| Approach Slab Concrete:  | \$645,650           | 1692   |
| Bridge Rails:            | \$505,450           | 2990   |
| Bridge Overlay:          | \$973,625           | 1357   |
| Bridge Concrete Stain:   | \$16,711            |  |
| Bridge Drain System:     | \$280,000           |  |
| Bridge Slope Protection: | \$43,580            | 36980 m <sup>2</sup>                         |
| <b>N. Total</b>          | <b>\$45,585,413</b> | <b>Unit cost \$1,232.70 \$/m<sup>2</sup></b> |

Note: The regional costs used \$1200/m2, upon further review of Legacy contract price, \$1232.70/m2 was used for these alignment specific estimates.

#### Structure Typical





| Alt         | Cross Streets | typical length (m) | width (m) | Additional structure area (m <sup>2</sup> ) for       |   |   | Cost not Including Termini Interchanges | Cost Termini Interchanges | Total Cost          |
|-------------|---------------|--------------------|-----------|---|---|---|---|---------------------------|---------------------|
|             |               |                    |           | Area (m <sup>2</sup> ) Excluding Termini Interchanges | skewed crossings, interior interchanges, and tracks (A) | Cost not Including Termini Interchanges |   |                           |                     |
| DRG 1       | 12            | 55                 | 33        | 21780   | 10890   | \$40,272,457                            | \$55,107,753                            |                           | <b>\$95,380,210</b> |
|             | Link 2        | 4                  | 55        | 7260  | 660   | \$9,763,020                             |   |                           |                     |
|             | Link 3        | 5                  | 55        | 9075  | 10230   | \$23,797,361                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| DRG 2       | 12            | 55                 | 33        | 21780   | 10890   | \$40,272,457                            | \$55,107,753                            |                           | <b>\$95,380,210</b> |
|             | Link 2        | 4                  | 55        | 7260  | 660   | \$9,763,020                             |   |                           |                     |
|             | Link 3        | 5                  | 55        | 9075  | 10230   | \$23,797,361                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| DRG 3       | 10            | 55                 | 33        | 18150   | 11220   | \$36,204,532                            | \$55,107,753                            |                           | <b>\$91,312,285</b> |
|             | Link 2        | 0                  | 55        | 0   | 0   | \$0                                     |   |                           |                     |
|             | Link 3        | 7                  | 55        | 12705   | 11220   | \$29,492,456                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| DRG 4       | 10            | 55                 | 33        | 18150   | 4290  | \$27,661,889                            | \$55,107,753                            |                           | <b>\$82,769,642</b> |
|             | Link 2        | 0                  | 55        | 0   | 0   | \$0                                     |   |                           |                     |
|             | Link 3        | 7                  | 55        | 12705   | 4290  | \$20,949,813                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| DRG 5 (B)   | 10            | 55                 | 33        | 18150   | 3135  | \$26,238,116                            | \$55,107,753                            |                           | <b>\$81,345,869</b> |
|             | Link 2        | 0                  | 55        | 0   | 0   | \$0                                     |   |                           |                     |
|             | Link 3        | 7                  | 55        | 12705   | 3135  | \$19,526,040                            |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |
| ALT E (B,C) | 4             | 55                 | 33        | 7260  | 2273  | \$11,751,372                            | \$55,107,753                            |                           | <b>\$66,859,125</b> |
|             | Link 2        | 0                  | 55        | 0   | 0   | \$0                                     |   |                           |                     |
|             | Link 3        | 1                  | 55        | 1815  | 2273  | \$5,039,296                             |   |                           |                     |
|             | Link 4        | 3                  | 55        | 5445  | 0   | \$6,712,076                             |   |                           |                     |

**Notes:**

Note A, Additional lengths for skew crossings, railroad tracks, and Mill Creek crossing

DRG 1 DRG1 at Redwood Road and 400 West (+10m each) , 500 S. over DRG tracks (55m), DRG1 at Mill Creek (55m)

DRG1 over DRG tracks near golf course (200m)

DRG 2 DRG2 at Redwood Road and 400 West (+10m each) , 500 S. over DRG tracks (55m), DRG2 at Mill Creek (55m)

DRG2 over DRG tracks near golf course (200m)

DRG 3 DRG3 at Redwood Road, 1100 West, and 500 South (+10m each), 500 S. over DRG (55m),

DRG3 at Mill Creek (55m), DRG3 over DRG tracks near golf course (200m)

DRG 4 DRG 4 at Redwood (+10m), DRG 4 at 500 S. Interchange (+10m), DRG 4 over DRG tracks (55 m), DRG4 at Mill Creek

DRG 5 DRG5 at Redwood Road, 500 S, 1100 West, and 400 N. (+10 m each) DRG5 at Mill Creek (55m)

ALT E 2273 m2 area for Mill Creek crossing (see attached spreadsheet).

Note B, The D&amp;RG becomes inactive at 400 North, therefore DRG5 and GSL do not require a structure to cross the tracks.

Note C, The cross streets for Alt E go over Legacy

**Mill Creek**

Area from plan sheet

ALT E

SB (Includes Mainline and

L (m)= 48

W (m)= 26

Area (m2)= 1248

NB (Includes mainline and trail)

L (m)= 41

W (m)= 25

Area (m2)= 1025

Total area (m2) 2273



|                |                    |                 |     |             |          |
|----------------|--------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Striping Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                    | <b>No.</b>      |     |             |          |

Striping cost is \$1.00/m based on average 2003 UDOT bid prices, 027650060.

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

North

Interchange \$412,752

South

Interchange \$155,280

**Subtotal= \$568,032**

Total length required for restriping cross streets 200 m

Assume cross streets are 4 lanes (2 each direction) 3 solid lines 2 skip lines = 3.5

Interchanges at 500 South and Parrish Lane

8 Ramps 500 m long = 4000 m

2 lanes = 2 solid 1 skip = 2.25

Ramps 9000 m

500 South = 9200 m

Crossing Street 200 m

Parrish Lane = 9200 m

Interchange 9200 m

**Subtotal = 18400 m**

#### Mainline

|       |        | Length,<br>Excluding N/S<br>Interchanges |       | Striping 4 solid<br>lines 2 skip |           |
|-------|--------|--|-------|----------------------------------|-----------|
| Alt   |        | (miles)                                  | (m)   | lines                            | Total (m) |
| DRG 1 | Link 1 | 0  | 0     | 4.5                              | 0         |
|       | Link 2 | 2.5                                      | 4,325 | 4.5                              | 19,463    |
|       | Link 3 | 3.6                                      | 5,625 | 4.5                              | 25,313    |
|       | Link 4 | 4.1                                      | 6,510 | 4.5                              | 29,295    |
|       | Link 5 | 0  | 0     | 4.5                              | 0         |
| DRG 2 | Link 1 | 0  | 0     | 4.5                              | 0         |
|       | Link 2 | 2.5                                      | 4,325 | 4.5                              | 19,463    |
|       | Link 3 | 3.6                                      | 5,625 | 4.5                              | 25,313    |
|       | Link 4 | 4.1                                      | 6,510 | 4.5                              | 29,295    |
|       | Link 5 | 0  | 0     | 4.5                              | 0         |
| DRG 3 | Link 1 | 0  | 0     | 4.5                              | 0         |
|       | Link 2 | 1.9                                      | 3,320 | 4.5                              | 14,940    |
|       | Link 3 | 4.5                                      | 7,120 | 4.5                              | 32,040    |
|       | Link 4 | 4.1                                      | 6,510 | 4.5                              | 29,295    |
|       | Link 5 | 0  | 0     | 4.5                              | 0         |
| DRG 4 | Link 1 | 0  | 0     | 4.5                              | 0         |
|       | Link 2 | 1.9                                      | 3,320 | 4.5                              | 14,940    |
|       | Link 3 | 4.4                                      | 6,910 | 4.5                              | 31,095    |
|       | Link 4 | 4.1                                      | 6,510 | 4.5                              | 29,295    |
|       | Link 5 | 0  | 0     | 4.5                              | 0         |
| DRG 5 | Link 1 | 0  | 0     | 4.5                              | 0         |
|       | Link 2 | 1.9                                      | 3,320 | 4.5                              | 14,940    |
|       | Link 3 | 4.3                                      | 6,705 | 4.5                              | 30,173    |
|       | Link 4 | 4.1                                      | 6,510 | 4.5                              | 29,295    |
|       | Link 5 | 0  | 0     | 4.5                              | 0         |

|       |        |     |       |     |        |
|-------|--------|-----|-------|-----|--------|
| ALT E | Link 1 | 0   | 0     | 4.5 | 0      |
|       | Link 2 | 1.9 | 3,320 | 4.5 | 14,940 |
|       | Link 3 | 4.4 | 6,860 | 4.5 | 30,870 |
|       | Link 4 | 4.1 | 6,510 | 4.5 | 29,295 |
|       | Link 5 | 0   | 0     | 4.5 | 0      |

**Cross Streets**

|       |        | Cross Streets<br>excluding all<br>interchanges | Striping lines | Total (m) |
|-------|--------|--|----------------|-----------|
| DRG 1 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 4  | 3.5            | 2,800     |
|       | Link 3 | 4  | 3.5            | 2,800     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| DRG 2 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 4  | 3.5            | 2,800     |
|       | Link 3 | 4  | 3.5            | 2,800     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| DRG 3 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 0  | 3.5            | 0         |
|       | Link 3 | 6  | 3.5            | 4,200     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| DRG 4 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 0  | 3.5            | 0         |
|       | Link 3 | 6  | 3.5            | 4,200     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| DRG 5 | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 0  | 3.5            | 0         |
|       | Link 3 | 6  | 3.5            | 4,200     |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |
| ALT E | Link 1 | 0  | 3.5            | 0         |
|       | Link 2 | 0  | 3.5            | 0         |
|       | Link 3 | 0  | 3.5            | 0         |
|       | Link 4 | 2  | 3.5            | 1,400     |
|       | Link 5 | 0  | 3.5            | 0         |

**Internal Interchanges (500 South & Parrish Lane)**

|                  |           |
|------------------|-----------|
| All Alternatives | Total (m) |
| Link 3           | 9,200     |
| Link 4           | 9,200     |

**Totals**

| Alt   |        | Total (m) | Cost per m | Cost Not Including North/South Interchanges | Cost of Termini Interchanges | Total Cost       |
|-------|--------|-----------|------------|---|------------------------------|------------------|
| DRG 1 | Link 1 | 0         | \$1.00     | \$0   | \$155,280                    | <b>\$155,280</b> |
|       | Link 2 | 22,263    | \$1.00     | \$22,263                                    | \$0                          | <b>\$22,263</b>  |
|       | Link 3 | 37,313    | \$1.00     | \$37,313                                    | \$0                          | <b>\$37,313</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895                                    | \$0                          | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0   | \$412,752                    | <b>\$412,752</b> |
| DRG 2 | Link 1 | 0         | \$1.00     | \$0   | \$155,280                    | <b>\$155,280</b> |
|       | Link 2 | 22,263    | \$1.00     | \$22,263                                    | \$0                          | <b>\$22,263</b>  |
|       | Link 3 | 37,313    | \$1.00     | \$37,313                                    | \$0                          | <b>\$37,313</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895                                    | \$0                          | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0   | \$412,752                    | <b>\$412,752</b> |
| DRG 3 | Link 1 | 0         | \$1.00     | \$0   | \$155,280                    | <b>\$155,280</b> |
|       | Link 2 | 14,940    | \$1.00     | \$14,940                                    | \$0                          | <b>\$14,940</b>  |
|       | Link 3 | 45,440    | \$1.00     | \$45,440                                    | \$0                          | <b>\$45,440</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895                                    | \$0                          | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0   | \$412,752                    | <b>\$412,752</b> |
| DRG 4 | Link 1 | 0         | \$1.00     | \$0   | \$155,280                    | <b>\$155,280</b> |
|       | Link 2 | 14,940    | \$1.00     | \$14,940                                    | \$0                          | <b>\$14,940</b>  |
|       | Link 3 | 44,495    | \$1.00     | \$44,495                                    | \$0                          | <b>\$44,495</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895                                    | \$0                          | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0   | \$412,752                    | <b>\$412,752</b> |
| DRG 5 | Link 1 | 0         | \$1.00     | \$0   | \$155,280                    | <b>\$155,280</b> |
|       | Link 2 | 14,940    | \$1.00     | \$14,940                                    | \$0                          | <b>\$14,940</b>  |
|       | Link 3 | 43,573    | \$1.00     | \$43,573                                    | \$0                          | <b>\$43,573</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895                                    | \$0                          | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0   | \$412,752                    | <b>\$412,752</b> |
| ALT E | Link 1 | 0         | \$1.00     | \$0   | \$155,280                    | <b>\$155,280</b> |
|       | Link 2 | 14,940    | \$1.00     | \$14,940                                    | \$0                          | <b>\$14,940</b>  |
|       | Link 3 | 40,070    | \$1.00     | \$40,070                                    | \$0                          | <b>\$40,070</b>  |
|       | Link 4 | 39,895    | \$1.00     | \$39,895                                    | \$0                          | <b>\$39,895</b>  |
|       | Link 5 | 0         | \$1.00     | \$0   | \$412,752                    | <b>\$412,752</b> |



|                |                    |                 |     |             |          |
|----------------|--------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Fence Estimates    | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                    | <b>No.</b>      |     |             |          |

Fencing includes both sides of the ROW (6' chain link) and between trail and roadway (4' chain link). Split rail fencing is provided the entire length of the trail for separation of equestrians and multi-users.

See Microstation file fence.dgn for fence locations and lengths

6' Fence cost from 2003 UDOT average bid items is \$29/m, 028210018 Type II.

\* FAK Contract price, use \$18/m

\*\*No UDOT bid items, see attached documentation from American Fence and Supply Co. (\$2.79-\$3.89/ft, not including concrete) and Vinyl Fence and Deck Wholesaler (\$2.57/ft). Use 3.50/ft or \$11.50/m.

American Fence and Supply Co, Inc. [www.afence.com/SplitrailCAT/split\\_rail\\_pricing.htm](http://www.afence.com/SplitrailCAT/split_rail_pricing.htm)

Vinyl Fence and Vinyl Deck Wholesaler [www.vinylfenceanddeck.com](http://www.vinylfenceanddeck.com)

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

For estimates without the trail cost includes only 6' ROW fence. The 4' fence separates the roadway from the trail and the split rail fence separates the two trails.

#### Contract Price for Termini Interchanges

North

Interchange \$606,851

South

Interchange \$777,615

**Subtotal= \$1,384,466**



|      |        | 6' ROW Fence |           |               |
|------|--------|--------------|-----------|---------------|
|      |        | Length       | Unit Cost | Mainline Cost |
| DRG1 | Link 1 | 0            | \$29      | \$0           |
|      | Link 2 | 9,165        | \$29      | \$265,773     |
|      | Link 3 | 13,154       | \$29      | \$381,466     |
|      | Link 4 | 15,060       | \$29      | \$436,740     |
|      | Link 5 | 0            | \$29      | \$0           |
| DRG2 | Link 1 | 0            | \$29      | \$0           |
|      | Link 2 | 8,595        | \$29      | \$249,264     |
|      | Link 3 | 13,154       | \$29      | \$381,466     |
|      | Link 4 | 15,060       | \$29      | \$436,740     |
|      | Link 5 | 0            | \$29      | \$0           |
| DRG3 | Link 1 | 0            | \$29      | \$0           |
|      | Link 2 | 6,647        | \$29      | \$192,763     |
|      | Link 3 | 16,194       | \$29      | \$469,626     |
|      | Link 4 | 15,060       | \$29      | \$436,740     |
|      | Link 5 | 0            | \$29      | \$0           |
| DRG4 | Link 1 | 0            | \$29      | \$0           |
|      | Link 2 | 6,647        | \$29      | \$192,763     |
|      | Link 3 | 15,356       | \$29      | \$445,324     |
|      | Link 4 | 15,060       | \$29      | \$436,740     |
|      | Link 5 | 0            | \$29      | \$0           |
| DRG5 | Link 1 | 0            | \$29      | \$0           |
|      | Link 2 | 6,647        | \$29      | \$192,763     |
|      | Link 3 | 15,247       | \$29      | \$442,159     |
|      | Link 4 | 15,060       | \$29      | \$436,740     |
|      | Link 5 | 0            | \$29      | \$0           |

|       |        |        |      |           |
|-------|--------|--------|------|-----------|
| ALT E | Link 1 | 0      | \$29 | \$0       |
|       | Link 2 | 6,647  | \$29 | \$192,763 |
|       | Link 3 | 14,462 | \$29 | \$419,411 |
|       | Link 4 | 15,060 | \$29 | \$436,740 |
|       | Link 5 | 0      | \$29 | \$0       |

**4' Chain link Fence\***

|       |        | Length | Unit Cost | Mainline Cost |
|-------|--------|--------|-----------|---------------|
| DRG1  | Link 1 | 0      | \$18      | \$0           |
|       | Link 2 | 4,325  | \$18      | \$77,850      |
|       | Link 3 | 5,625  | \$18      | \$101,250     |
|       | Link 4 | 6,510  | \$18      | \$117,180     |
|       | Link 5 | 0      | \$18      | \$0           |
| DRG2  | Link 1 | 0      | \$18      | \$0           |
|       | Link 2 | 4,325  | \$18      | \$77,850      |
|       | Link 3 | 5,625  | \$18      | \$101,250     |
|       | Link 4 | 6,510  | \$18      | \$117,180     |
|       | Link 5 | 0      | \$18      | \$0           |
| DRG3  | Link 1 | 0      | \$18      | \$0           |
|       | Link 2 | 3,320  | \$18      | \$59,760      |
|       | Link 3 | 7,120  | \$18      | \$128,160     |
|       | Link 4 | 6,510  | \$18      | \$117,180     |
|       | Link 5 | 0      | \$18      | \$0           |
| DRG4  | Link 1 | 0      | \$18      | \$0           |
|       | Link 2 | 3,320  | \$18      | \$59,760      |
|       | Link 3 | 6,910  | \$18      | \$124,380     |
|       | Link 4 | 6,510  | \$18      | \$117,180     |
|       | Link 5 | 0      | \$18      | \$0           |
| DRG5  | Link 1 | 0      | \$18      | \$0           |
|       | Link 2 | 3,320  | \$18      | \$59,760      |
|       | Link 3 | 6,705  | \$18      | \$120,690     |
|       | Link 4 | 6,510  | \$18      | \$117,180     |
|       | Link 5 | 0      | \$18      | \$0           |
| ALT E | Link 1 | 0      | \$18      | \$0           |
|       | Link 2 | 3,320  | \$18      | \$59,760      |
|       | Link 3 | 6,860  | \$18      | \$123,480     |
|       | Link 4 | 6,510  | \$18      | \$117,180     |
|       | Link 5 | 0      | \$18      | \$0           |

**Split Rail Fence\*\***

|      |        | Length | Unit Cost | Mainline Cost |
|------|--------|--------|-----------|---------------|
| DRG1 | Link 1 | 0      | \$11.50   | \$0           |
|      | Link 2 | 2,721  | \$11.50   | \$31,289      |
|      | Link 3 | 4,592  | \$11.50   | \$52,813      |
|      | Link 4 | 1,270  | \$11.50   | \$14,605      |
|      | Link 5 | 0      | \$11.50   | \$0           |
| DRG2 | Link 1 | 0      | \$11.50   | \$0           |
|      | Link 2 | 1,232  | \$11.50   | \$14,164      |
|      | Link 3 | 4,592  | \$11.50   | \$52,813      |
|      | Link 4 | 1,270  | \$11.50   | \$14,605      |
|      | Link 5 | 0      | \$11.50   | \$0           |
| DRG3 | Link 1 | 0      | \$11.50   | \$0           |
|      | Link 2 | 768    | \$11.50   | \$8,830       |
|      | Link 3 | 3,938  | \$11.50   | \$45,286      |
|      | Link 4 | 1,270  | \$11.50   | \$14,605      |
|      | Link 5 | 0      | \$11.50   | \$0           |

|       |        |       |         |          |
|-------|--------|-------|---------|----------|
| DRG4  | Link 1 | 0     | \$11.50 | \$0      |
|       | Link 2 | 768   | \$11.50 | \$8,830  |
|       | Link 3 | 3,525 | \$11.50 | \$40,539 |
|       | Link 4 | 1,270 | \$11.50 | \$14,605 |
|       | Link 5 | 0     | \$11.50 | \$0      |
| DRG5  | Link 1 | 0     | \$11.50 | \$0      |
|       | Link 2 | 768   | \$11.50 | \$8,830  |
|       | Link 3 | 4,425 | \$11.50 | \$50,889 |
|       | Link 4 | 1,270 | \$11.50 | \$14,605 |
|       | Link 5 | 0     | \$11.50 | \$0      |
| ALT E | Link 1 | 0     | \$11.50 | \$0      |
|       | Link 2 | 768   | \$11.50 | \$8,830  |
|       | Link 3 | 3,854 | \$11.50 | \$44,324 |
|       | Link 4 | 1,270 | \$11.50 | \$14,605 |
|       | Link 5 | 0     | \$11.50 | \$0      |

**Total Fence Costs**

|       |        | Cost of<br>North/South<br>Interchanges | Cost Not<br>Including<br>North/South<br>Interchanges | Total Cost       | Cost Not<br>Including<br>North/South<br>Interchanges | Total Cost       |
|-------|--------|--|--|------------------|--|------------------|
| Alt   |        |  | With Trail   |                  | Without Trail  |                  |
| DRG1  | Link 1 | \$777,615                              | \$0  | <b>\$777,615</b> | \$0  | <b>\$777,615</b> |
|       | Link 2 | \$0                                    | \$374,912  | <b>\$374,912</b> | \$265,773  | <b>\$265,773</b> |
|       | Link 3 | \$0                                    | \$535,529  | <b>\$535,529</b> | \$381,466  | <b>\$381,466</b> |
|       | Link 4 | \$0                                    | \$568,525  | <b>\$568,525</b> | \$436,740  | <b>\$436,740</b> |
|       | Link 5 | \$606,851                              | \$0  | <b>\$606,851</b> | \$0  | <b>\$606,851</b> |
| DRG2  | Link 1 | \$777,615                              | \$0  | <b>\$777,615</b> | \$0  | <b>\$777,615</b> |
|       | Link 2 | \$0                                    | \$341,277  | <b>\$341,277</b> | \$249,264  | <b>\$249,264</b> |
|       | Link 3 | \$0                                    | \$535,529  | <b>\$535,529</b> | \$381,466  | <b>\$381,466</b> |
|       | Link 4 | \$0                                    | \$568,525  | <b>\$568,525</b> | \$436,740  | <b>\$436,740</b> |
|       | Link 5 | \$606,851                              | \$0  | <b>\$606,851</b> | \$0  | <b>\$606,851</b> |
| DRG3  | Link 1 | \$777,615                              | \$0  | <b>\$777,615</b> | \$0  | <b>\$777,615</b> |
|       | Link 2 | \$0                                    | \$261,353  | <b>\$261,353</b> | \$192,763  | <b>\$192,763</b> |
|       | Link 3 | \$0                                    | \$643,072  | <b>\$643,072</b> | \$469,626  | <b>\$469,626</b> |
|       | Link 4 | \$0                                    | \$568,525  | <b>\$568,525</b> | \$436,740  | <b>\$436,740</b> |
|       | Link 5 | \$606,851                              | \$0  | <b>\$606,851</b> | \$0  | <b>\$606,851</b> |
| DRG4  | Link 1 | \$777,615                              | \$0  | <b>\$777,615</b> | \$0  | <b>\$777,615</b> |
|       | Link 2 | \$0                                    | \$261,353  | <b>\$261,353</b> | \$192,763  | <b>\$192,763</b> |
|       | Link 3 | \$0                                    | \$610,243  | <b>\$610,243</b> | \$445,324  | <b>\$445,324</b> |
|       | Link 4 | \$0                                    | \$568,525  | <b>\$568,525</b> | \$436,740  | <b>\$436,740</b> |
|       | Link 5 | \$606,851                              | \$0  | <b>\$606,851</b> | \$0  | <b>\$606,851</b> |
| DRG5  | Link 1 | \$777,615                              | \$0  | <b>\$777,615</b> | \$0  | <b>\$777,615</b> |
|       | Link 2 | \$0                                    | \$261,353  | <b>\$261,353</b> | \$192,763  | <b>\$192,763</b> |
|       | Link 3 | \$0                                    | \$613,737  | <b>\$613,737</b> | \$442,159  | <b>\$442,159</b> |
|       | Link 4 | \$0                                    | \$568,525  | <b>\$568,525</b> | \$436,740  | <b>\$436,740</b> |
|       | Link 5 | \$606,851                              | \$0  | <b>\$606,851</b> | \$0  | <b>\$606,851</b> |
| ALT E | Link 1 | \$777,615                              | \$0  | <b>\$777,615</b> | \$0  | <b>\$777,615</b> |
|       | Link 2 | \$0                                    | \$261,353  | <b>\$261,353</b> | \$192,763  | <b>\$192,763</b> |
|       | Link 3 | \$0                                    | \$587,215  | <b>\$587,215</b> | \$419,411  | <b>\$419,411</b> |
|       | Link 4 | \$0                                    | \$568,525  | <b>\$568,525</b> | \$436,740  | <b>\$436,740</b> |
|       | Link 5 | \$606,851                              | \$0  | <b>\$606,851</b> | \$0  | <b>\$606,851</b> |

|         |                         |          |    |      |           |
|---------|-------------------------|----------|----|------|-----------|
| Project | Legacy SEIS             | Computed | TW | Date | 5/17/2004 |
| Subject | DRG Cost Estimates      | Checked  |    | Date |           |
| Task    | Drainage Considerations | Sheet    |    | Of   |           |
| Job No. |                         | No.      |    |      |           |

The drainage scheme for the Preferred Alternative was to allow sheet flow of runoff into the Legacy Nature Preserve, to the extent practical.

Assuming the same stormwater controls in the northern and southern interchanges for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

|                                      |             |
|--------------------------------------|-------------|
| North Interchange                    | \$2,158,256 |
| South Interchange                    | \$324,696   |
| <b>\$2,482,952 interchange Total</b> |             |

#### Box Culverts for Major Stream Crossings

Box Culverts will be placed at the following Stream crossings: North Canyon, Oil Drain, Drainage Canal, Barton Creek, Deuel/Stone Creek, Parrish Creek, Barnard Creek, Ricks Creek, Davis Creek, Steed Creek, Farmington Creek, Shepard Creek.

Cost (6'x6' prefabricated) is based on UDOT average bid prices 2003.

Box culverts run from ROW line to ROW line.

Length = 80 m

Unit cost is \$ 4,000.00 per m

|                  | Number | Cost            |   |
|------------------|--------|-----------------|---|
| All Alts. Link 1 | 2      | \$ 640,000.00   | Oil Drain, Drainage Canal   |
| Link 2           | 1      | \$ 320,000.00   | North Canyon  |
| Link 3           | 2      | \$ 640,000.00   | Barton Creek, Deuel/Stone Creek                                     |
| Link 4           | 5      | \$ 1,600,000.00 | Parrish Creek, Barnard Canal, Ricks Creek, Steed Creek, Davis Creek |
| Link 5           | 2      | \$ 640,000.00   | Farmington Creek, Shepard Creek                                     |

#### 24" RCP and Catch Basins for median drainage and minor drainage crossings

Pipe runs along the entire length (excluding termini interchanges) and perpendicular every 100 m.

24" RCP cost of \$110/m is based on average UDOT bid item, 026100428.

3 Catch Basins will be placed at each perpendicular crossing, east side, median and west side of the ROW for D&RG alts. Due to sheet flow into the Nature Preserve only 2 catch basins will be placed for Alt E (median and east side of ROW).

Catch basins \$1,800 each

Unit cost= \$110 /m

| Alt.  | Link   | Length<br>(excluding<br>termini | Perpendicular<br>distance (m)= | Total<br>perpendicular<br>crossings= | Length of<br>perpendicular<br>crossings (m) | Total length of<br>pipe (m)= | # of Catch<br>Basins | Cost Catch<br>Basins | Cost        |
|-------|--------|---------------------------------|--------------------------------|--------------------------------------|---|------------------------------|----------------------|----------------------|-------------|
| DRG 1 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 4,325                           | 80                             | 43                                   | 3,460                                       | 7,785                        | 130                  | \$233,550            | \$1,089,900 |
|       | Link 3 | 5,625                           | 80                             | 56                                   | 4,500                                       | 10,125                       | 169                  | \$303,750            | \$1,417,500 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| DRG 2 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 4,325                           | 80                             | 43                                   | 3,460                                       | 7,785                        | 130                  | \$233,550            | \$1,089,900 |
|       | Link 3 | 5,625                           | 80                             | 56                                   | 4,500                                       | 10,125                       | 169                  | \$303,750            | \$1,417,500 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| DRG 3 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 3,320                           | 80                             | 33                                   | 2,656                                       | 5,976                        | 100                  | \$179,280            | \$836,640   |
|       | Link 3 | 7,120                           | 80                             | 71                                   | 5,696                                       | 12,816                       | 214                  | \$384,480            | \$1,794,240 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| DRG 4 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 3,320                           | 80                             | 33                                   | 2,656                                       | 5,976                        | 100                  | \$179,280            | \$836,640   |
|       | Link 3 | 6,910                           | 80                             | 69                                   | 5,528                                       | 12,438                       | 207                  | \$373,140            | \$1,741,320 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| DRG 5 | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 3,320                           | 80                             | 33                                   | 2,656                                       | 5,976                        | 100                  | \$179,280            | \$836,640   |
|       | Link 3 | 6,705                           | 80                             | 67                                   | 5,364                                       | 12,069                       | 201                  | \$362,070            | \$1,689,660 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
| ALT E | Link 1 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |
|       | Link 2 | 3,320                           | 80                             | 33                                   | 2,656                                       | 5,976                        | 66                   | \$119,520            | \$776,880   |
|       | Link 3 | 6,860                           | 80                             | 69                                   | 5,488                                       | 12,348                       | 137                  | \$246,960            | \$1,605,240 |
|       | Link 4 | 6,510                           | 80                             | 65                                   | 5,208                                       | 11,718                       | 195                  | \$351,540            | \$1,640,520 |
|       | Link 5 | 0                               | 80                             | 0                                    | 0   | 0                            | 0                    | \$0                  | \$0         |



**36" RCP for minor drainage crossings**

Pipe runs perpendicular every 500 m.

36" RCP cost of \$160/m is based on average UDOT bid item 026100432.

Unit cost= \$160/m

| Alt.  |        | Length | Perpendicular | Total | Length of | Cost      |
|-------|--------|--------|---------------|-------|-----------|-----------|
| DRG 1 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 4,325  | 80            | 9     | 692       | \$110,720 |
|       | Link 3 | 5,625  | 80            | 11    | 900       | \$144,000 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| DRG 2 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 4,325  | 80            | 9     | 692       | \$110,720 |
|       | Link 3 | 5,625  | 80            | 11    | 900       | \$144,000 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| DRG 3 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 3,320  | 80            | 7     | 531       | \$84,992  |
|       | Link 3 | 7,120  | 80            | 14    | 1,139     | \$182,272 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| DRG 4 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 3,320  | 80            | 7     | 531       | \$84,992  |
|       | Link 3 | 6,910  | 80            | 14    | 1,106     | \$176,896 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| DRG 5 | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 3,320  | 80            | 7     | 531       | \$84,992  |
|       | Link 3 | 6,705  | 80            | 13    | 1,073     | \$171,648 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |
| ALT E | Link 1 | 0      | 80            | 0     | 0         | \$0       |
|       | Link 2 | 3,320  | 80            | 7     | 531       | \$84,992  |
|       | Link 3 | 6,860  | 80            | 14    | 1,098     | \$175,616 |
|       | Link 4 | 6,510  | 80            | 13    | 1,042     | \$166,656 |
|       | Link 5 | 0      | 80            | 0     | 0         | \$0       |

**Special Drainage due to highly developed areas additional Piping, 36" RCP**

Additional piping (36" RCP, \$160/m, UDOT Bid Item 026100432) is assumed to be required near developed areas.

Because more developed areas exists around the DRG alignments, sheet flow is not feasible in many areas. Additional catch basins and piping, ditching, and detention may be required to control stormwater runoff.

See Figures 1 and 2 for areas needing special drainage considerations and potential detention basin locations. Please note no additional wetland impacts were assumed to be associated with detention basins.

**Unit Costs**

|              |         |      |                  |
|--------------|---------|------|------------------|
| 36" RCP      | \$160   | \$/m |                  |
| Catch basins | \$1,800 | each | at 100 m spacing |

|       |        | Length<br>needed | Length+10%<br>(rounded) | Pipe Cost   | Catch Basins | Total       |
|-------|--------|------------------|-------------------------|-------------|--------------|-------------|
| DRG 1 | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 2274             | 2500                    | \$400,000   | \$45,000     | \$445,000   |
|       | Link 3 | 6692             | 7400                    | \$1,184,000 | \$133,200    | \$1,317,200 |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |
| DRG 2 | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 1451             | 1600                    | \$256,000   | \$28,800     | \$284,800   |
|       | Link 3 | 6692             | 7400                    | \$1,184,000 | \$133,200    | \$1,317,200 |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |
| DRG 3 | Link 1 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 2 | 0                | 0                       | \$0         | \$0          | \$0         |
|       | Link 3 | 6380             | 7000                    | \$1,120,000 | \$126,000    | \$1,246,000 |
|       | Link 4 | 1288             | 1400                    | \$224,000   | \$25,200     | \$249,200   |
|       | Link 5 | 0                | 0                       | \$0         | \$0          | \$0         |

|       |        |      |      |             |           |             |
|-------|--------|------|------|-------------|-----------|-------------|
| DRG 4 | Link 1 | 0    | 0    | \$0         | \$0       | \$0         |
|       | Link 2 | 0    | 0    | \$0         | \$0       | \$0         |
|       | Link 3 | 5489 | 6000 | \$960,000   | \$108,000 | \$1,068,000 |
|       | Link 4 | 1288 | 1400 | \$224,000   | \$25,200  | \$249,200   |
|       | Link 5 | 0    | 0    | \$0         | \$0       | \$0         |
| DRG 5 | Link 1 | 0    | 0    | \$0         | \$0       | \$0         |
|       | Link 2 | 0    | 0    | \$0         | \$0       | \$0         |
|       | Link 3 | 6256 | 6900 | \$1,104,000 | \$124,200 | \$1,228,200 |
|       | Link 4 | 1288 | 1400 | \$224,000   | \$25,200  | \$249,200   |
|       | Link 5 | 0    | 0    | \$0         | \$0       | \$0         |
| ALT E | Link 1 | 0    | 0    | \$0         | \$0       | \$0         |
|       | Link 2 | 0    | 0    | \$0         | \$0       | \$0         |
|       | Link 3 | 351  | 400  | \$64,000    | \$7,200   | \$71,200    |
|       | Link 4 | 1288 | 1400 | \$224,000   | \$25,200  | \$249,200   |
|       | Link 5 | 0    | 0    | \$0         | \$0       | \$0         |

**Detention Basins**

Detention basins would be needed in developed area to avoid overloading existing storm drain systems and flooding these

| DRG 1  |                        |                                  | DRG 2  |                        |                                  | DRG 3  |                        |                                  |
|--------|------------------------|----------------------------------|--------|------------------------|----------------------------------|--------|------------------------|----------------------------------|
| Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) |
| Link 2 | 1.45                   | 5868                             | Link 2 | 0.31                   | 1255                             | Link 3 | 0.76                   | 3076                             |
| Link 3 | 0.95                   | 3845                             | Link 2 | 0.62                   | 2509                             | Link 3 | 1.20                   | 4856                             |
| Link 3 | 1.20                   | 4856                             | Link 3 | 0.95                   | 3845                             | Link 3 | 2.94                   | 11898                            |
| Link 3 | 2.94                   | 11898                            | Link 3 | 1.20                   | 4856                             |        |                        |                                  |
|        |                        |                                  | Link 3 | 2.94                   | 11898                            |        |                        |                                  |

| DRG 4  |                        |                                  | DRG 5  |                        |                                  | ALT E   |                        |                                  |
|--------|------------------------|----------------------------------|--------|------------------------|----------------------------------|---------|------------------------|----------------------------------|
| Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Links  | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Links   | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) |
| Link 3 | 0.86                   | 3480                             | Link 3 | 1.88                   | 7608                             | Link 3* | 1.05                   | 4249                             |
| Link 3 | 3.28                   | 13274                            | Link 3 | 2.94                   | 11898                            |         |                        |                                  |

\*For continuity with summary sheets, the cost for the Alt E detention basin will be placed in Link 3.

**Detention Basins Costs**

|                           |                  |                   |                           |
|---------------------------|------------------|-------------------|---------------------------|
| 1                         | acres            |                   |                           |
| Area                      | 43560            | ft <sup>2</sup>   |                           |
| 3 feet deep               | 130680           | ft <sup>3</sup>   |                           |
|                           | 4840             | CY/acre           |                           |
| <b>Item</b>               | <b>Unit Cost</b> | <b>Unit</b>       | <b>Total Cost</b>         |
| Earthwork (excavation,    | \$3.50           | CY                | \$16,940                  |
| Finish grading            | \$1.00           | SY                | \$4,840                   |
| Liner                     | \$0.65           | SY                | \$3,146                   |
| Protective soil placement | \$1.00           | SY                | \$4,840                   |
|                           |                  | Sum               | \$29,766                  |
|                           |                  | Contingency (25%) | \$7,442                   |
|                           |                  | <b>Subtotal</b>   | <b>\$37,208 per acre</b>  |
| Inlet/Outlet Controls     | \$10,000         | Each              | <b>\$10,000 per basin</b> |

| Alt.  | Detention Area (Acres) | Total Detention Costs |
|-------|------------------------|-----------------------|
| DRG 1 | Link 2                 | 1.45                  |
|       | Link 3                 | 5.09                  |
| DRG 2 | Link 2                 | 0.93                  |
|       | Link 3                 | 5.09                  |
| DRG 3 | Link 3                 | 4.90                  |
| DRG 4 | Link 3                 | 4.14                  |
| DRG 5 | Link 3                 | 4.82                  |
| ALT E | Link 4                 | 1.05                  |

**Total Costs**

|             |        | Contract Price<br>for<br>North/South<br>Interchanges | Box Culverts Cost | 24" RCP and<br>Catch Basins<br>Cost | 36" RCP Costs<br>(Minor<br>Drainage) | Special<br>Drainage Costs<br>(development) | Detention<br>Basins Costs | Total Costs        |
|-------------|--------|--|-------------------|-------------------------------------|--------------------------------------|--|---------------------------|--------------------|
| <b>Alts</b> |        |  |                   |                                     |                                      |  |                           |                    |
| DRG 1       | Link 1 | \$324,696  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|             | Link 2 | \$0  | \$320,000         | \$1,089,900                         | \$110,720                            | \$445,000                                  | \$63,951                  | <b>\$2,029,571</b> |
|             | Link 3 | \$0  | \$640,000         | \$1,417,500                         | \$144,000                            | \$1,317,200                                | \$219,391                 | <b>\$3,738,091</b> |
|             | Link 4 | \$0  | \$1,600,000       | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|             | Link 5 | \$2,158,256  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| DRG 2       | Link 1 | \$324,696  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|             | Link 2 | \$0  | \$320,000         | \$1,089,900                         | \$110,720                            | \$284,800                                  | \$54,607                  | <b>\$1,860,027</b> |
|             | Link 3 | \$0  | \$640,000         | \$1,417,500                         | \$144,000                            | \$1,317,200                                | \$219,391                 | <b>\$3,738,091</b> |
|             | Link 4 | \$0  | \$1,600,000       | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|             | Link 5 | \$2,158,256  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| DRG 3       | Link 1 | \$324,696  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|             | Link 2 | \$0  | \$320,000         | \$836,640                           | \$84,992                             | \$0  | \$0                       | <b>\$1,241,632</b> |
|             | Link 3 | \$0  | \$640,000         | \$1,794,240                         | \$182,272                            | \$1,246,000                                | \$212,320                 | <b>\$4,074,832</b> |
|             | Link 4 | \$0  | \$1,600,000       | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|             | Link 5 | \$2,158,256  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| DRG 4       | Link 1 | \$324,696  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|             | Link 2 | \$0  | \$320,000         | \$836,640                           | \$84,992                             | \$0  | \$0                       | <b>\$1,241,632</b> |
|             | Link 3 | \$0  | \$640,000         | \$1,741,320                         | \$176,896                            | \$1,068,000                                | \$174,039                 | <b>\$3,800,255</b> |
|             | Link 4 | \$0  | \$1,600,000       | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|             | Link 5 | \$2,158,256  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| DRG 5       | Link 1 | \$324,696  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|             | Link 2 | \$0  | \$320,000         | \$836,640                           | \$84,992                             | \$0  | \$0                       | <b>\$1,241,632</b> |
|             | Link 3 | \$0  | \$640,000         | \$1,689,660                         | \$171,648                            | \$1,228,200                                | \$199,341                 | <b>\$3,928,849</b> |
|             | Link 4 | \$0  | \$1,600,000       | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|             | Link 5 | \$2,158,256  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |
| ALT E       | Link 1 | \$324,696  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$964,696</b>   |
|             | Link 2 | \$0  | \$320,000         | \$776,880                           | \$84,992                             | \$0  | \$0                       | <b>\$1,181,872</b> |
|             | Link 3 | \$0  | \$640,000         | \$1,605,240                         | \$175,616                            | \$71,200                                   | \$49,066                  | <b>\$2,541,122</b> |
|             | Link 4 | \$0  | \$1,600,000       | \$1,640,520                         | \$166,656                            | \$249,200                                  | \$0                       | <b>\$3,656,376</b> |
|             | Link 5 | \$2,158,256  | \$640,000         | \$0                                 | \$0                                  | \$0  | \$0                       | <b>\$2,798,256</b> |

|         |                    |          |    |      |           |
|---------|--------------------|----------|----|------|-----------|
| Project | Legacy SEIS        | Computed | TW | Date | 6/14/2004 |
| Subject | DRG Cost Estimates | Checked  |    | Date |           |
| Task    | Detention Sizing   | Sheet    |    | Of   |           |
| Job No. |                    | No.      |    |      |           |

### Volume of Runoff from Alignments in Developed Areas Only

|                        |                       |                       |  |
|------------------------|-----------------------|-----------------------|--|
| Segment Length         |                       | SCS method            |  |
| Length East            | 4350 m                | Description           | Area (ac) CN Area*CN                     |
| Length West            | 788 m                 | Paved Area            | 30.9506703 98 3033.16569                 |
| Total Length           | 5138 m                | Vegetated Condition   | 71.1865418 70 4983.05792                 |
|                        | 16852.64 ft           | Average CN            | 78.5                                     |
| Total Width of Roadway |                       | Initial Abstraction   | 0.55 inches                              |
| Pavement               | 264 ft, ROW           | Watershed Storage     | 2.74 inches                              |
| Other                  | 80 ft                 | Precipitation (50 Yr) | 3.0 inches                               |
|                        | 184 ft                | Direct Runoff (50 Yr) | 1.16 inches                              |
| Total Area             |                       | 50-Year Direct Runoff | 9.852 acre-ft                            |
| 102.137212 acres       |                       | Total Volume=         | 429156.828 ft <sup>3</sup>               |
| Calculated Ratio       |                       | Depth                 | 3 ft, limited due to shallow groundwater |
| 0.00064                | x Length = Basin Area | Area                  | 143052.276 ft <sup>2</sup>               |
|                        |                       | Area                  | 3.28 acres                               |

### Detention Areas

| DRG 1      |                        |                                  | DRG 2      |                        |                                  | DRG 3      |                        |                                  |
|------------|------------------------|----------------------------------|------------|------------------------|----------------------------------|------------|------------------------|----------------------------------|
| Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) |
| 1381       |                        |                                  | 482        | 0.31                   | 1255                             | 1182       | 0.76                   | 3076                             |
| 893        | 1.45                   | 5868                             | 969        | 0.62                   | 2509                             |            |                        |                                  |
| 1494       | 0.95                   | 3845                             | 1494       | 0.95                   | 3845                             |            |                        |                                  |
| 1109       |                        |                                  | 1109       |                        |                                  | 1109       |                        |                                  |
| 776        | 1.20                   | 4856                             | 776        | 1.20                   | 4856                             | 776        | 1.20                   | 4856                             |
| 3813       |                        |                                  | 3813       |                        |                                  | 3813       |                        |                                  |
| 788        | 2.94                   | 11898                            | 788        | 2.94                   | 11898                            | 788        | 2.94                   | 11898                            |

| DRG 4      |                        |                                  | DRG 5      |                        |                                  | ALT E      |                        |                                  |
|------------|------------------------|----------------------------------|------------|------------------------|----------------------------------|------------|------------------------|----------------------------------|
| Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) | Length (m) | Detention Area (Acres) | Detention Area (m <sup>2</sup> ) |
| 1339       | 0.86                   | 3480                             | 1377       |                        |                                  | 1639       | 1.05                   | 4249                             |
|            |                        |                                  | 1566       | 1.88                   | 7608                             |            |                        |                                  |
| 4350       |                        |                                  | 3813       |                        |                                  |            |                        |                                  |
| 788        | 3.28                   | 13274                            | 788        | 2.94                   | 11898                            |            |                        |                                  |



|                |   |                 |     |             |           |
|----------------|---|-----------------|-----|-------------|-----------|
| <b>Project</b> | Legacy SEIS                               | <b>Computed</b> | BRS | <b>Date</b> | 5/18/2004 |
| <b>Subject</b> | DRG Cost Estimates                        | <b>Checked</b>  |     | <b>Date</b> |           |
| <b>Task</b>    | Excavation for Frontage Roads/Cul-de-sacs | <b>Sheet</b>    |     | <b>Of</b>   |           |
| <b>Job No.</b> |   | <b>No.</b>      |     |             |           |

**Contract Price for Termini Interchanges**

North

Interchange      **\$321,962**    Link 5

South

Interchange      **\$117,623**    Link 1

For frontage roads, cross streets, and cul-de-sacs, area will be excavated to 1 m and replaced with new pavement section.

**Frontage Roads and Cross Streets**

| Pavement widths  | (ft) | Quantity | Total (ft) |               |
|------------------|------|----------|------------|---------------|
| Outside Shoulder | 8    | 2        | 16         |               |
| Travel Lanes     | 12   | 2        | 24         |               |
| Median Lane      | 14   | 1        | 14         |               |
|                  |      |          | <b>54</b>  | <b>16.5 m</b> |

**Cul-de-Sac**      R=15 mPavement Area      700      m<sup>2</sup>**Cross Streets**

L (m) = 200

Area (m<sup>2</sup>)= 3300      For each crossing

|              |        | Cross Streets<br>excluding<br>interchanges |        | Area (m <sup>2</sup> ) |
|--------------|--------|--|--------|------------------------|
| Alt<br>DRG 1 | Link 1 | 0  | 0      |                        |
|              | Link 2 | 4  | 13,200 |                        |
|              | Link 3 | 5  | 16,500 |                        |
|              | Link 4 | 3  | 9,900  |                        |
|              | Link 5 | 0  | 0      |                        |
| DRG 2        | Link 1 | 0  | 0      |                        |
|              | Link 2 | 4  | 13,200 |                        |
|              | Link 3 | 5  | 16,500 |                        |
|              | Link 4 | 3  | 9,900  |                        |
|              | Link 5 | 0  | 0      |                        |
| DRG 3        | Link 1 | 0  | 0      |                        |
|              | Link 2 | 0  | 0      |                        |
|              | Link 3 | 7  | 23,100 |                        |
|              | Link 4 | 3  | 9,900  |                        |
|              | Link 5 | 0  | 0      |                        |
| DRG 4        | Link 1 | 0  | 0      |                        |
|              | Link 2 | 0  | 0      |                        |
|              | Link 3 | 7  | 23,100 |                        |
|              | Link 4 | 3  | 9,900  |                        |
|              | Link 5 | 0  | 0      |                        |
| DRG 5        | Link 1 | 0  | 0      |                        |
|              | Link 2 | 0  | 0      |                        |
|              | Link 3 | 7  | 23,100 |                        |
|              | Link 4 | 3  | 9,900  |                        |
|              | Link 5 | 0  | 0      |                        |

|       |        |   |       |
|-------|--------|---|-------|
| ALT E | Link 1 | 0 | 0     |
|       | Link 2 | 0 | 0     |
|       | Link 3 | 1 | 3,300 |
|       | Link 4 | 3 | 9,900 |
|       | Link 5 | 0 | 0     |

**Frontage Roads**

| Alt   |        | Frontage<br>Roads/Cross<br>Streets (m) | Area (m2) |
|-------|--------|--|-----------|
| DRG 1 | Link 1 | 0                                      | 0         |
|       | Link 2 | 957                                    | 15,784    |
|       | Link 3 | 988                                    | 16,300    |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| DRG 2 | Link 1 | 0                                      | 0         |
|       | Link 2 | 287                                    | 4,739     |
|       | Link 3 | 988                                    | 16,300    |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| DRG 3 | Link 1 | 0                                      | 0         |
|       | Link 2 | 0                                      | 0         |
|       | Link 3 | 240                                    | 3,967     |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| DRG 4 | Link 1 | 0                                      | 0         |
|       | Link 2 | 0                                      | 0         |
|       | Link 3 | 240                                    | 3,967     |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| DRG 5 | Link 1 | 0                                      | 0         |
|       | Link 2 | 0                                      | 0         |
|       | Link 3 | 451                                    | 7,433     |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |
| ALT E | Link 1 | 0                                      | 0         |
|       | Link 2 | 0                                      | 0         |
|       | Link 3 | 187                                    | 3,090     |
|       | Link 4 | 408                                    | 6,730     |
|       | Link 5 | 0                                      | 0         |

**Cul-de-Sac**

| Alt   |        | Cul-de-sacs | Area (m2) |
|-------|--------|-------------|-----------|
| DRG 1 | Link 1 | 0           | 0         |
|       | Link 2 | 1           | 700       |
|       | Link 3 | 13          | 9,100     |
|       | Link 4 | 1           | 700       |
|       | Link 5 | 0           | 0         |
| DRG 2 | Link 1 | 0           | 0         |
|       | Link 2 | 3           | 2,100     |
|       | Link 3 | 13          | 9,100     |
|       | Link 4 | 1           | 700       |
|       | Link 5 | 0           | 0         |

|       |        |   |       |
|-------|--------|---|-------|
| DRG 3 | Link 1 | 0 | 0     |
|       | Link 2 | 1 | 700   |
|       | Link 3 | 7 | 4,900 |
|       | Link 4 | 1 | 700   |
|       | Link 5 | 0 | 0     |
| DRG 4 | Link 1 | 0 | 0     |
|       | Link 2 | 1 | 700   |
|       | Link 3 | 6 | 4,200 |
|       | Link 4 | 1 | 700   |
|       | Link 5 | 0 | 0     |
| DRG 5 | Link 1 | 0 | 0     |
|       | Link 2 | 1 | 700   |
|       | Link 3 | 6 | 4,200 |
|       | Link 4 | 1 | 700   |
|       | Link 5 | 0 | 0     |
| ALT E | Link 1 | 0 | 0     |
|       | Link 2 | 1 | 700   |
|       | Link 3 | 2 | 1,400 |
|       | Link 4 | 1 | 700   |
|       | Link 5 | 0 | 0     |

**Excavation**

Cost for excavation UDOT Bid item 023160020 \$5.25/m3

Depth (m)= 1

| Alt   |        | Total area<br>(m2) | Excavation<br>Volume (m3) | Total Cost |
|-------|--------|--------------------|---------------------------|------------|
| DRG 1 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 29,684             | 29,684                    | \$ 155,840 |
|       | Link 3 | 41,900             | 41,900                    | \$ 219,977 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| DRG 2 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 20,039             | 20,039                    | \$ 105,204 |
|       | Link 3 | 41,900             | 41,900                    | \$ 219,977 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| DRG 3 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 700                | 700                       | \$ 3,675   |
|       | Link 3 | 31,967             | 31,967                    | \$ 167,825 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| DRG 4 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 700                | 700                       | \$ 3,675   |
|       | Link 3 | 31,267             | 31,267                    | \$ 164,150 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| DRG 5 | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 700                | 700                       | \$ 3,675   |
|       | Link 3 | 34,733             | 34,733                    | \$ 182,350 |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |
| ALT E | Link 1 | 0                  | 0                         | \$ 117,623 |
|       | Link 2 | 700                | 700                       | \$ 3,675   |
|       | Link 3 | 7,790              | 7,790                     | \$ 40,900  |
|       | Link 4 | 17,330             | 17,330                    | \$ 90,984  |
|       | Link 5 | 0                  | 0                         | \$ 321,962 |

|         |                      |          |     |      |          |
|---------|----------------------|----------|-----|------|----------|
| Project | Legacy SEIS          | Computed | BRS | Date | 5/3/2004 |
| Subject | DRG Cost Estimates   | Checked  |     | Date |          |
| Task    | Demolition Estimates | Sheet    |     | Of   |          |
| Job No. |                      | No.      |     |      |          |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

#### Contract Price for Termini Interchanges

North

Interchange \$1,065,007 Link 5

South

Interchange \$315,963 Link 1

See Demolition.dgn for demolition areas for pavement, bridge structures, and RR.

No additional bridge structures will have to be demolished for the D&RG alternatives.

Demolition includes demolition of cross streets (asphalt pavement).

Approximately double the amount of mainline pavement will have to be demolished for the D&RG alts as opposed to the GSL.

Contract price for GSL, not including the structures was \$280,220, double that for DRG alts.

ROW costs include demolition items associated with each property including any parkinglots, driveways, structures, sidewalks, etc.

See asphalt summary sheet for street crossings and pavement widths.

UDOT Bid Item 022220040 \$2.89 /m2

| Alt   |        | Cross Streets excluding interchanges | Cross Street Pavement Area (m2) | Additional existing pavement (m) | Width same as cross streets (m) | Additional Pavement area (m2) | Total Pavement area (m2) | Cost      |
|-------|--------|--------------------------------------|---------------------------------|----------------------------------|---------------------------------|-------------------------------|--------------------------|-----------|
| DRG 1 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 4                                    | 13,200                          | 572                              | 16.5                            | 9,443                         | 22,643                   | \$65,438  |
|       | Link 3 | 5                                    | 16,500                          | 2,903                            | 16.5                            | 47,900                        | 64,400                   | \$186,115 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| DRG 2 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 4                                    | 13,200                          | 227                              | 16.5                            | 3,746                         | 16,946                   | \$48,972  |
|       | Link 3 | 5                                    | 16,500                          | 2,903                            | 16.5                            | 47,900                        | 64,400                   | \$186,115 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| DRG 3 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 0                                    | 0                               | 292                              | 16.5                            | 4,815                         | 4,815                    | \$13,914  |
|       | Link 3 | 7                                    | 23,100                          | 2,016                            | 16.5                            | 33,257                        | 56,357                   | \$162,873 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| DRG 4 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 0                                    | 0                               | 292                              | 16.5                            | 4,815                         | 4,815                    | \$13,914  |
|       | Link 3 | 7                                    | 23,100                          | 1,804                            | 16.5                            | 29,766                        | 52,866                   | \$152,783 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| DRG 5 | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 0                                    | 0                               | 292                              | 16.5                            | 4,815                         | 4,815                    | \$13,914  |
|       | Link 3 | 7                                    | 23,100                          | 2,051                            | 16.5                            | 33,842                        | 56,942                   | \$164,561 |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
| ALT E | Link 1 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |
|       | Link 2 | 0                                    | 0                               | 292                              | 16.5                            | 4,815                         | 4,815                    | \$13,914  |
|       | Link 3 | 1                                    | 3,300                           | 703                              | 16.5                            | 11,601                        | 14,901                   | \$43,064  |
|       | Link 4 | 3                                    | 9,900                           | 0                                | 16.5                            | 0                             | 9,900                    | \$28,611  |
|       | Link 5 | 0                                    | 0                               | 0                                | 16.5                            | 0                             | 0                        | \$0       |



| Alt   |        | Cost of<br>termini<br>interchanges | Total Cost         |
|-------|--------|------------------------------------|--------------------|
| DRG1  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$65,438</b>    |
|       | Link 3 | \$0                                | <b>\$186,115</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| DRG2  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$48,972</b>    |
|       | Link 3 | \$0                                | <b>\$186,115</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| DRG3  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$13,914</b>    |
|       | Link 3 | \$0                                | <b>\$162,873</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| DRG4  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$13,914</b>    |
|       | Link 3 | \$0                                | <b>\$152,783</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| DRG5  | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$13,914</b>    |
|       | Link 3 | \$0                                | <b>\$164,561</b>   |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |
| ALT E | Link 1 | \$315,963                          | <b>\$315,963</b>   |
|       | Link 2 | \$0                                | <b>\$13,914</b>    |
|       | Link 3 | \$0                                | <b>\$43,064</b>    |
|       | Link 4 | \$0                                | <b>\$28,611</b>    |
|       | Link 5 | \$1,065,007                        | <b>\$1,065,007</b> |

|                |                           |                 |                      |
|----------------|---------------------------|-----------------|----------------------|
| <b>Project</b> | Legacy SEIS               | <b>Computed</b> | <b>Date</b> 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates        | <b>Checked</b>  | <b>Date</b>          |
| <b>Task</b>    | Traffic Control Estimates | <b>Sheet</b>    | <b>Of</b>            |
| <b>Job No.</b> |                           | <b>No.</b>      |                      |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.  
Broken into cost per link by percent of length in each alternative.

#### Contract Price for Termini Interchanges

|                  |                    |
|------------------|--------------------|
| North            |                    |
| Interchange      | \$1,426,322        |
| South            |                    |
| Interchange      | \$475,861          |
| Mainline         | \$151,668          |
| <b>Subtotal=</b> | <b>\$2,053,851</b> |

|           |        | % based on L | Mainline    |
|-----------|--------|--------------|-------------|
| DRG 1 & 2 | Link 2 | 26.28%       | \$39,852.01 |
|           | Link 3 | 34.17%       | \$51,830.65 |
|           | Link 4 | 39.23%       | \$59,499.36 |
| DRG 3     | Link 2 | 19.85%       | \$30,099.69 |
|           | Link 3 | 41.24%       | \$62,547.52 |
|           | Link 4 | 39.23%       | \$59,499.36 |
| DRG 4     | Link 2 | 19.85%       | \$30,099.69 |
|           | Link 3 | 41.24%       | \$62,547.52 |
|           | Link 4 | 39.23%       | \$59,499.36 |
| DRG 5     | Link 2 | 19.85%       | \$30,099.69 |
|           | Link 3 | 41.24%       | \$62,547.52 |
|           | Link 4 | 39.23%       | \$59,499.36 |
| Alt E     | Link 2 | 19.85%       | \$30,099.69 |
|           | Link 3 | 41.24%       | \$62,547.52 |
|           | Link 4 | 39.23%       | \$59,499.36 |

Apply a 10% increase for RR flagging.

Apply a 20% increase for increased density.

Add 30% to contract price for Alternative E for all D&RG alternatives.

The 30% increase only counts in links that differ from the Alt E alignment.

| Alt   |        | <b>Total Cost</b>  |
|-------|--------|--------------------|
| DRG1  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$51,808</b>    |
|       | Link 3 | <b>\$67,380</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| DRG2  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$51,808</b>    |
|       | Link 3 | <b>\$67,380</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| DRG3  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$30,100</b>    |
|       | Link 3 | <b>\$81,312</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| DRG4  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$30,100</b>    |
|       | Link 3 | <b>\$81,312</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| DRG5  | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$30,100</b>    |
|       | Link 3 | <b>\$81,312</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |
| ALT E | Link 1 | <b>\$475,861</b>   |
|       | Link 2 | <b>\$30,100</b>    |
|       | Link 3 | <b>\$62,548</b>    |
|       | Link 4 | <b>\$59,499</b>    |
|       | Link 5 | <b>\$1,426,322</b> |

|         |                       |          |     |      |           |
|---------|-----------------------|----------|-----|------|-----------|
| Project | Legacy SEIS           | Computed | BRS | Date | 5/18/2004 |
| Subject | DRG Cost Estimates    | Checked  |     | Date |           |
| Task    | Landscaping Estimates | Sheet    |     | Of   |           |
| Job No. |                       | No.      |     |      |           |

Landscaping base cost of \$10,000,000 was for the original proposed project budget. Landscaping is planned for areas adjacent to the trail, these will be planted with trees and shrubs, native grasses will be used in the median and along roadway side slopes.

|             | Landscaping         | Irrigation |
|-------------|---------------------|------------|
| North       |                     |            |
| Interchange | \$2,582,692         |            |
| South       |                     |            |
| Interchange | \$3,515,325         |            |
| Mainline    | \$3,901,983         |            |
|             | <b>\$10,000,000</b> |            |

The 264 ft ROW does not accommodate a berm, therefore there will be a reduction in the amount of landscaping. The original ROW width was 328 ft.

328 ft= \$10,000,000  
264 ft= X

Amount of landscaping based on a ratio equal to the width reduction.

$$X = (264/328) * \$10,000,000$$

$$X = \$8,048,780$$

|             |                      |
|-------------|----------------------|
| North       |                      |
| Interchange | \$2,078,752 Link 5   |
| South       |                      |
| Interchange | \$2,829,408 Link 1   |
| Mainline    | \$3,140,620 Link 2-4 |
|             | <b>\$8,048,780</b>   |

|       |        |        |             |
|-------|--------|--------|-------------|
| DRG 1 | Link 1 |        | \$2,829,408 |
|       | Link 2 | 26.28% | \$825,224   |
|       | Link 3 | 34.17% | \$1,073,268 |
|       | Link 4 | 39.23% | \$1,232,065 |
|       | Link 5 |        | \$2,078,752 |
| DRG 2 | Link 1 |        | \$2,829,408 |
|       | Link 2 | 26.28% | \$825,224   |
|       | Link 3 | 34.17% | \$1,073,268 |
|       | Link 4 | 39.23% | \$1,232,065 |
|       | Link 5 |        | \$2,078,752 |
| DRG 3 | Link 1 |        | \$2,829,408 |
|       | Link 2 | 19.85% | \$623,281   |
|       | Link 3 | 41.24% | \$1,295,184 |
|       | Link 4 | 39.23% | \$1,232,065 |
|       | Link 5 |        | \$2,078,752 |
| DRG 4 | Link 1 |        | \$2,829,408 |
|       | Link 2 | 19.85% | \$623,281   |
|       | Link 3 | 41.24% | \$1,295,184 |
|       | Link 4 | 39.23% | \$1,232,065 |
|       | Link 5 |        | \$2,078,752 |
| DRG 5 | Link 1 |        | \$2,829,408 |
|       | Link 2 | 19.85% | \$623,281   |
|       | Link 3 | 41.24% | \$1,295,184 |
|       | Link 4 | 39.23% | \$1,232,065 |
|       | Link 5 |        | \$2,078,752 |
| Alt E | Link 1 |        | \$2,829,408 |
|       | Link 2 | 19.85% | \$623,281   |
|       | Link 3 | 41.24% | \$1,295,184 |
|       | Link 4 | 39.23% | \$1,232,065 |
|       | Link 5 |        | \$2,078,752 |



|                |                    |                 |     |             |          |
|----------------|--------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Lighting Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                    | <b>No.</b>      |     |             |          |

Lighting costs assume lighting the interchanges only. Estimate is actual cost from FAK contract.

**Contract Price all Interchanges**

North

Interchange      \$1,214,615    Link 5

South

Interchange      \$157,823    Link 1

500 South

Interchange      \$129,289    Link 3

Parrish Lane

Interchange      \$128,294    Link 4

**Total=    \$1,630,021**

|                |                               |                 |     |             |          |
|----------------|-------------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS                   | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates            | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Petroleum Pipelined Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                               | <b>No.</b>      |     |             |          |

- The relocations for Link 1 are already contracted out as shown below. This same amount will be assumed in the DRG Alternatives.
- Link 4 is the same for all alternatives. Since Alternative E has been contracted that amount will be used for all alternatives.
- There are no relocations located in Link 5.

Petroleum Pipeline Relocation Cost= \$650/m

#### Petroleum Pipelines

| Alt  |        | Tesoro (m) | Chevron (m) | Pioneer (m) | Total (m) | Total (mi) | Cost               |
|------|--------|------------|-------------|-------------|-----------|------------|--------------------|
| DRG1 | Link 2 | 724        | 477         | 217         | 1418      | 0.88       | <b>\$921,726</b>   |
|      | Link 3 | 568        | 1151        | 3451        | 5170      | 3.21       | <b>\$3,360,227</b> |
| DRG2 | Link 2 | 0          | 231         | 217         | 448       | 0.28       | <b>\$291,382</b>   |
|      | Link 3 | 568        | 1151        | 3451        | 5170      | 3.21       | <b>\$3,360,227</b> |
| DRG3 | Link 2 | 0          | 0           | 0           | 0         | 0.00       | <b>\$0</b>         |
|      | Link 3 | 241        | 881         | 3063        | 4185      | 2.60       | <b>\$2,720,517</b> |
| DRG4 | Link 2 | 0          | 0           | 0           | 0         | 0.00       | <b>\$0</b>         |
|      | Link 3 | 82         | 1316        | 3330        | 4728      | 2.94       | <b>\$3,072,960</b> |
| DRG5 | Link 2 | 0          | 0           | 0           | 0         | 0.00       | <b>\$0</b>         |
|      | Link 3 | 97         | 1310        | 2659        | 4065      | 2.53       | <b>\$2,642,517</b> |

#### Contract Price

ALT E

|  |                       |        |
|--|-----------------------|--------|
| Amoco Replace 150mm & 200 mm gas lines     | <b>\$150,840.00</b>   | Link 1 |
| Pioneer Replace 200mm Gas Line             | <b>\$108,599.00</b>   | Link 1 |
| Amoco Relocate 2 730MM Pipes               | <b>\$1,101,130.00</b> | Link 4 |
| Chevron - Relocate Line to 90 Deg Crossing | <b>\$530,870.00</b>   | Link 3 |
| Pioneer - Relocate 730MM Line              | <b>\$792,775.00</b>   | Link 4 |

|                |                    |                 |     |             |          |
|----------------|--------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS        | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | ATMS Estimates     | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                    | <b>No.</b>      |     |             |          |

ATMS cost are based on actual cost from FAK contract.

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

**Contract Price**

|               |   |                    |
|---------------|---|--------------------|
| Link 1        | South Interchange                                     | \$1,140,936        |
| Link 2        |   | \$0                |
| Link 3        | 500 South Interchange                                 | \$598,142          |
| Link 4        | Glovers Lane Interchange,<br>Parrish Lane Interchange | \$1,202,006        |
| Link 5        | North Interchange                                     | \$1,958,849        |
| <b>Total=</b> |   | <b>\$4,899,933</b> |

|         |                    |          |    |      |           |
|---------|--------------------|----------|----|------|-----------|
| Project | Legacy SEIS        | Computed | DW | Date | 5/14/2004 |
| Subject | DRG Cost Estimates | Checked  |    | Date |           |
| Task    | ROW Estimates      | Sheet    |    | Of   |           |
| Job No. |                    | No.      |    |      |           |

## ROW Cost Estimates

|      | From Dave West |                           |                |
|------|----------------|---------------------------|----------------|
|      | Variable ROW   | Reduced Width ROW Savings | Total ROW Cost |
| DRG1 | \$177,000,000  | \$826,500                 | \$176,173,500  |
| DRG2 | \$176,000,000  | \$946,400                 | \$175,053,600  |
| DRG3 | \$116,000,000  | \$1,001,880               | \$114,998,120  |
| DRG4 | \$118,000,000  | \$1,104,880               | \$116,895,120  |
| DRG5 | \$123,000,000  | \$1,006,880               | \$121,993,120  |
| AltE | \$63,690,000   | \$787,500                 | \$62,902,500   |

Estimated by taking the total ROW cost spreadsheets provided by Dave West and dividing the data at the approximate link boundaries. Could not use Alt E estimates for links because these estimates include Legacy Nature Preserve costs. Used DRG1 ROW estimate, divided into links, and applied to other alternatives where appropriate.

| Links Estimates |             |              |              |              |             |               |
|-----------------|-------------|--------------|--------------|--------------|-------------|---------------|
|                 | 1           | 2            | 3            | 4            | 5           | Σ Links       |
| DRG1            | \$7,252,216 | \$52,100,646 | \$86,518,518 | \$21,867,558 | \$9,002,001 | \$177,000,000 |
| DRG2            | \$7,252,216 | \$51,359,707 | \$86,518,518 | \$21,867,558 | \$9,002,001 | \$176,000,000 |
| DRG3            | \$7,252,216 | \$5,769,824  | \$72,108,401 | \$21,867,558 | \$9,002,001 | \$116,000,000 |
| DRG4            | \$7,252,216 | \$5,769,824  | \$74,108,401 | \$21,867,558 | \$9,002,001 | \$118,000,000 |
| DRG5            | \$7,252,216 | \$5,769,824  | \$79,108,401 | \$21,867,558 | \$9,002,001 | \$123,000,000 |
| AltE            | \$7,252,216 | \$5,769,824  | \$19,798,401 | \$21,867,558 | \$9,002,001 | \$63,690,000  |

|  |   |
|--|---|
|  | Estimated Link cost   |
|  | copied value  |
|  | Calculated link cost, based on the total cost minus ROW costs estimated for other links |



|         |                              |          |    |      |           |
|---------|------------------------------|----------|----|------|-----------|
| Project | Legacy SEIS                  | Computed | TW | Date | 2/14/2004 |
| Subject | DRG Cost Estimates           | Checked  |    | Date |           |
| Task    | Wetland Mitigation Estimates | Sheet    |    | Of   |           |
| Job No. |                              | No.      |    |      |           |

| Wetlands Mitigation Costs                                |                           |
|--|---------------------------|
| <b>Alternative E</b>                                     | <b>DRG Cost Estimates</b> |
| Actual ROW Costs for Mitigation Property (per Dave West) | \$20,500,000              |
| Improvement Costs  | \$4,500,000               |
| Total=   | \$25,000,000              |
| erred Alternative wetland impacts                        | 114 acres                 |
| Cost per acre=   | \$219,298                 |
| <b>Alignments</b>  |                           |
| <i>Alternative E (95-m)</i>                              |                           |
| Estimated Wetland Impacts=                               | 100                       |
| Wetland Mitigation Cost=                                 | <b>\$21,929,825</b>       |
| <i>Denver and Rio Grande (95-m)</i>                      |                           |
| DRG1 Wetland Impacts=                                    | 93.4                      |
| Wetland Mitigation Cost=                                 | <b>\$20,491,228</b>       |
| DRG2 Wetland Impacts=                                    | 99.1                      |
| Wetland Mitigation Cost=                                 | <b>\$21,741,228</b>       |
| DRG3 Wetland Impacts=                                    | 97.1                      |
| Wetland Mitigation Cost=                                 | <b>\$21,302,632</b>       |
| DRG4 Wetland Impacts=                                    | 96.1                      |
| Wetland Mitigation Cost=                                 | <b>\$21,083,333</b>       |
| DRG5 Wetland Impacts=                                    | 93.3                      |
| Wetland Mitigation Cost=                                 | <b>\$20,469,298</b>       |

| Alt   |        | Wetlands<br>(acres) | Cost                |
|-------|--------|---------------------|---------------------|
| DRG 1 | Link 1 | 19.7                | \$4,328,947         |
|       | Link 2 | 5.7                 | \$1,250,000         |
|       | Link 3 | 17.5                | \$3,837,719         |
|       | Link 4 | 36.3                | \$7,960,526         |
|       | Link 5 | 14.2                | \$3,114,035         |
|       |        |                     | <b>\$20,491,228</b> |
| DRG 2 | Link 1 | 19.7                | \$4,328,947         |
|       | Link 2 | 11.4                | \$2,500,000         |
|       | Link 3 | 17.5                | \$3,837,719         |
|       | Link 4 | 36.3                | \$7,960,526         |
|       | Link 5 | 14.2                | \$3,114,035         |
|       |        |                     | <b>\$21,741,228</b> |
| DRG 3 | Link 1 | 19.7                | \$4,328,947         |
|       | Link 2 | 6.5                 | \$1,425,439         |
|       | Link 3 | 20.4                | \$4,473,684         |
|       | Link 4 | 36.3                | \$7,960,526         |
|       | Link 5 | 14.2                | \$3,114,035         |
|       |        |                     | <b>\$21,302,632</b> |
| DRG 4 | Link 1 | 19.7                | \$4,328,947         |
|       | Link 2 | 6.5                 | \$1,425,439         |
|       | Link 3 | 19.4                | \$4,254,386         |
|       | Link 4 | 36.3                | \$7,960,526         |
|       | Link 5 | 14.2                | \$3,114,035         |
|       |        |                     | <b>\$21,083,333</b> |
| DRG 5 | Link 1 | 19.7                | \$4,328,947         |
|       | Link 2 | 6.5                 | \$1,425,439         |
|       | Link 3 | 16.6                | \$3,640,351         |
|       | Link 4 | 36.3                | \$7,960,526         |
|       | Link 5 | 14.2                | \$3,114,035         |
|       |        |                     | <b>\$20,469,298</b> |
| ALT E | Link 1 | 19.7                | \$4,328,947         |
|       | Link 2 | 6.5                 | \$1,425,439         |
|       | Link 3 | 23.0                | \$5,043,860         |
|       | Link 4 | 36.3                | \$7,960,526         |
|       | Link 5 | 14.2                | \$3,114,035         |
|       |        |                     | <b>\$21,872,807</b> |

|                |                           |                 |     |             |           |
|----------------|---------------------------|-----------------|-----|-------------|-----------|
| <b>Project</b> | Legacy SEIS               | <b>Computed</b> | BRS | <b>Date</b> | 5/14/2004 |
| <b>Subject</b> | DRG Cost Estimates        | <b>Checked</b>  |     | <b>Date</b> |           |
| <b>Task</b>    | Hazardous Waste Estimates | <b>Sheet</b>    |     | <b>Of</b>   |           |
| <b>Job No.</b> |                           | <b>No.</b>      |     |             |           |

Remove Petroleum contaminated soils to a depth of 6 feet.

All soils removed within ROW

Soil excavation, hauling, disposal, and replacement = \$38/cu yd

| Alt                  | Koch Asphalt<br>(m2) | Silver Eagle<br>Refinery (m2) | Holly Corp<br>Refinery<br>(m2) | Total area<br>(m2) |
|----------------------|----------------------|-------------------------------|--------------------------------|--------------------|
| DRG1 - Link 2        | 13,721               | 0                             | 0                              | 13,721             |
| DRG 1, 2 - Link 2    | 0                    | 1,846                         | 0                              | 1,846              |
| DRG 1, 2 - Link 3    | 0                    | 2,666                         | 0                              | 2,666              |
| DRG 1, 2, 3 - Link 3 | 0                    | 0                             | 15,912                         | 15,912             |
| DRG 4                | 0                    | 0                             | 0                              | 0                  |
| DRG 5                | 0                    | 0                             | 0                              | 0                  |
| ALT E                | 0                    | 0                             | 0                              | 0                  |

Excavation depth 6 ft (1.83 m)

| Alt                  | Total<br>Excavation<br>Volume (m3) | Total<br>Excavation<br>Volume (yd3) | <b>Cost</b>        |
|----------------------|------------------------------------|-------------------------------------|--------------------|
| DRG1 - Link 2        | 25,109                             | 32,893                              | <b>\$1,249,947</b> |
| DRG 1, 2 - Link 2    | 3,378                              | 4,425                               | <b>\$168,166</b>   |
| DRG 1, 2 - Link 3    | 4,879                              | 6,391                               | <b>\$242,866</b>   |
| DRG 1, 2, 3 - Link 3 | 29,119                             | 38,146                              | <b>\$1,449,542</b> |
| DRG 4                | 0                                  | 0                                   | <b>\$0</b>         |
| DRG 5                | 0                                  | 0                                   | <b>\$0</b>         |
| ALT E                | 0                                  | 0                                   | <b>\$0</b>         |

Bountiful Sanitary Landfill Contract price:

| <b>Landfill Mod.</b>         |                       |
|------------------------------|-----------------------|
| Landfill Building Relocation | \$829,485.00          |
| Landfill Construction        | \$464,512.00          |
|                              | <b>\$1,293,997.00</b> |

Landfill is impacted by ALT E only.

|                |                               |                 |     |             |          |
|----------------|-------------------------------|-----------------|-----|-------------|----------|
| <b>Project</b> | Legacy SEIS                   | <b>Computed</b> | BRS | <b>Date</b> | 5/3/2004 |
| <b>Subject</b> | DRG Cost Estimates            | <b>Checked</b>  |     | <b>Date</b> |          |
| <b>Task</b>    | Utility Relocations Estimates | <b>Sheet</b>    |     | <b>Of</b>   |          |
| <b>Job No.</b> |                               | <b>No.</b>      |     |             |          |

Assuming same northern and southern interchange for D&RG Alternatives as Alternative E.

Costs include relocating sanitary sewer, overhead communications, gas lines, power lines, fiber optic lines, water lines, phone lines, etc.

Use contract price for Alt E.

#### **Contract Price for Alt E**

Costs do not include petroleum pipeline relocations

|                   |                    |
|-------------------|--------------------|
| North Interchange | \$2,347,330        |
| South Interchange | \$1,275,459        |
| Glovers Lane      | \$785,137          |
| 500 South         | \$1,632,089        |
| Option 1          | \$3,253,661        |
| <b>Total</b>      | <b>\$9,293,676</b> |

#### **Costs for D&RG Alts**

To determine costs for D&RG alts, 5 current UDOT projects in similarly developed areas were evaluated

| <b>UDOT Projects Evaluated</b>                    | <b>Total Cost</b> | <b>Utilities</b> | <b>Percentage<br/>of cost<br/>attributed to<br/>utilities</b> |
|---|-------------------|------------------|---|
| Extend Main Street from 5300 South to Vine Street | \$18,603,707      | \$1,690,000      | 9.1%  |
| State Street 7800 South to 6400 South             | \$14,360,200      | \$1,349,000      | 9.4%  |
| 36th Street Wall Avenue to Adams                  | \$4,099,571       | \$584,058        | 14.2%   |
| SR-71 12300 South Bangerter HWY to 700 East       | \$116,311,426     | \$14,000,000     | 12.0%   |
| Wall 30th and 31st                                | \$7,455,000       | \$1,300,000      | 17.4%   |

**To be conservative use 8%**